

AGRICULTURAL PSYCHOLOGY

RAMES DAS

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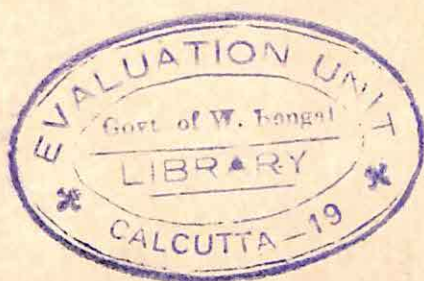
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Agricultural Psychology

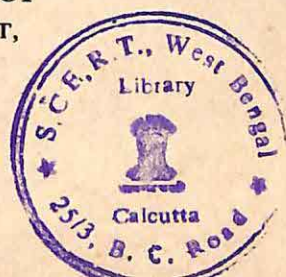
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To
Prof. Alec Rodger
who taught me the ABC of psychological research
at Birkbeck College
of the University of London
during 1952 - 55

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PREFACE

The present book has a story behind it. In 1952 I wrote an article on Psychology in Agriculture. However, its publication was not intended then. Gradually I forgot all about it. After long twenty one years, that is in 1973, when one day I was turning over my stock of old papers the article fell into my notice. I spared no time to hurry through its content, for everybody knows how pleasurable it is to go through one's own writings, particularly when they are so old ! I found the article having something of immense interest for the psychologists throughout the world. This gave me an impetus for writing another article "Plea For A New Branch Of Applied Psychology" for Issue XV of the International Newsletter published by the Educational Testing Service, U.S.A. In this article I pleaded for the development of "Agricultural Psychology" as a new subject and suggested that psychologists should immediately take up adequate research projects for this purpose, for time seems to have long been ripe and mature for such endeavours.

It is indeed astounding to note the tremendous headway that psychology has made in almost all the vital sectors of human life like industry, education, mental health, child rearing, etc. within the short span of time since its emergence as a science only in 1879. But it's strange that very little effort, if at all, has been made so far by the psychologists to apply the principles of their science in the field of agriculture which is the main source of human subsistence and the most populous amongst the human vocations.

Although agriculture has much in common with industry yet it has a lot of features that are quite specific to itself. The factory owners and workers and the cultivators and agricultural labourers live and work in quite different environments, perform tasks of different nature, are accustomed to different patterns of individual and social life and are faced with problems, personal and occupational, that are far from being alike. As workers, those employed in factories and those engaged in cultivation are, of course, subjected to the same broad principles of labour science, but this similarity cannot justify their inclusion in the same category if we think of the great psychological gulf that separates the two sections so pronouncedly. Commonness between industry and agriculture should not, in fact, be regarded as a bar to developing Agricultural Psychology as a separate and distinct branch of Applied Psychology like its other branches such as Child,

Animal, Social, Educational, Abnormal, Physiological, and Industrial Psychology. We cannot deny that many of these branches have much in common, yet they reasonably enjoy independent positions. For instance, Educational Psychology shares a lot of its content with Child, Animal, Abnormal, and Physiological Psychology, yet nobody has ever questioned its independent growth and status. With the advancement of knowledge specialisation, which means division of subjects into finer and more specific areas, is a natural development. This is how psychology sprang out of philosophy, political science out of civics, and nursing out of medical sciences. Nevertheless, specialisation, though it aims at fuller and more intensive treatment of a particular kind of facts, does not rule out interpenetration among different subjects. Social Studies is an example of interpenetration of history, economics and geography ; bio-physics of physics and biology ; sociology of civics, social psychology and anthropology ; and veterinary science of physiology, zoology, botany and medicine. Fuller treatment of certain phenomena requires that they must be looked at and explained from different perspectives. Thus interpenetration among subjects is a logical corollary of specialisation.

Hence, Agricultural Psychology has a legitimate claim to be built up and developed as a separate subject for proper analysis and treatment of a large number of agricultural phenomena having psycholo-

gical significance. We may quite reasonably expect that many of the problems of psychological interest in the sector of agriculture will also relate to several other disciplines like economics, geography, civics, geology, sociology, forestry, animal psychology, political science, botany, zoology, animal husbandry, veterinary science, industrial psychology and anthropology, but they will be all "agricultural" in the core demanding psychological treatment from the perspectives of the above related disciplines as much as necessary.

After having written the above mentioned article for the International Newsletter I myself took up the work in my own humble way, the present book being the result of my endeavours in that direction. Though, however, the book was written recently it had, in fact, as already stated, a long period of incubation beginning in 1952. I hope and believe that many other psychologists of the world will soon engage themselves in conducting careful researches in this maiden field of their beloved discipline and thus Agricultural Psychology will grow up as a richly interesting and useful subject in course of a few years hence.

Before I conclude I would request my readers, in this country and abroad, to furnish me with additional comparable data concerning their respective regions so that they may be incorporated in the second edition of this book and thereby contribute towards its enrichment in different dimensions.

I must thank Mr. J. Sinha and Mr. S. Sinha of Scientific Book Agency for publishing the primary and basal work on Agricultural Psychology which obviously embodies a great venture in a virgin tract of scientific enquiry. This shows their real love for research and advancement of knowledge.

October 1974
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AGRICULTURAL PSYCHOLOGY

CHAPTER I

ORIGIN AND DEVELOPMENT OF AGRICULTURE AND ITS PSYCHOLOGICAL FOUNDATIONS

We largely depend on agriculture for our existence. Most of the articles we consume as food are agricultural products. No country can, therefore, do without it. Countries concentrating on industrial and technological expansion or having little land for cultivation ultimately depend on others that have surplus agricultural products to sell them.

Agriculture, so much important though it is, was nevertheless, unknown to the primitive man who lived on fruits and roots he gathered from the wilderness and birds and animals he killed in hunting. He was a nomad, because he had to wander from place to place in search of food. No one exactly knows when agriculture was discovered by man. However, it is estimated that this great discovery took place sometime between 6000 and 3000 B.C., possibly in the flood-plains of the Nile in Egypt, the Euphrates and the Tigris in Iraq, the Yangtze

Kiang and the Howang Ho in China, and the Indus and the Ganges in India (Masani 1954—who collected this and other materials, referred to hereafter, from authoritative writings of V.G. Childe, Will Durant, E.E. Havell, K.P. Jayaswal, G.E.H. Joad, Peter Kropotkin, H. Van Loon, Lewis Mumford, Otto Neurath, F.G. Pearce and H.G. Wells). Radiocarbonic dating techniques locate the origin of plant and animal domestication at Jarmo at 6000 B.C. and at Jericho about 1000 years earlier. Later, between 6000 and 5000 B.C., farming villages were found spreading over the Mesopotamian plain, Anatolia and Egypt. Plant and animal husbandry was introduced in Western Europe by migrating farmers and herders in successive years. Farming had also started, in the mean time, in the eastern part of Iraq, the Indus Valley of India, and the northern region of China (Encyclopaedia Britannica, Vol.1, 1968).

Agriculture, in all probability, was a female discovery (Masani). When the men were out a-hunting for days together and the women had only cherries and berries, plucked from trees, to live upon, it is likely that they threw the seeds accidentally on wet grounds only to see saplings peep out a few days later and grow up into plants and trees in course of time. They must have observed this process to their great wonder and joy on repeated occasions and then reported it to the men-folk who tried, experimented and verified the process on larger

scales. Thus, it is presumed, originated agriculture.

However, as Masani reports, it perhaps took a long stretch of time for the human mind to grasp the causal relation between the two processes, viz., sowing of seeds and harvesting of crops. It was believed then that there would be no enough yield of crop unless human blood was poured into the soil in which the seeds were sown. Thus many lives had to be sacrificed and this was a common superstition and a cruel practice prevailing over a long time among the primitives throughout the world. The primitive man's idea of offering human sacrifice for favour of a rich crop might have its origin in his sense of paramount importance attached to food, his concept of vegetation being governed by a spirit, his notion that this spirit would be pleased only if it were offered the best present, and his belief that nothing was more precious than human life.

Many customs and instances of human sacrifice with a view to increasing the fertility of the land and thus ensuring a bumper crop have been recorded by Frazer (1971). For example, the Pawnees, the Indians of Guayaquil in Ecuador, and the Bagobos of Mindanao, one of the Philippine islands, used to offer human sacrifices at the time of sowing their fields. The people of Cuenca in Ecuador had the custom of sacrificing a hundred children every year at the harvest time. And with the ancient Mexi-

cans the custom was to offer human beings at different stages of the growth of the maize, the victims chosen being of the age corresponding to that of the corn in the field. Money-Kyrle (1939) remarks, after having reviewed the legends recorded by Frazer, that "In many legends, trees or animals spring up wherever the pieces (of the human victim) are buried or the blood has dropped on the earth." This primeval idea of human blood contributing to the growth and richness of vegetation is still found, in one form or the other, in some of the folk-tales of Bengal as well. For instance, in the story of "The Seven Champaka Brothers" (Mitra Mozumder, 1967) we see seven "champaka" trees and one "parul" tree sprout out from the heap of ashes in which seven royal male babies and one royal female baby were buried by their heart-less step-mothers immediately after they had opened their eyes. Likewise, in the story of "The Origin of Opium" (Day 1948) we see the poppy tree grow out of the flesh and bones of a queen who, however, was originally a mouse and then successively changed, according to her own wish, into a cat, a dog, an ape, a boar, an elephant and a beautiful girl by the good grace of a great sage. Similar stories will be found also in other parts of the world.

Indications of the primitive practice of human sacrifice among the farmers are found also in some of the rites and rituals even in these days. For example, in Scotland one piece of the Beltane cake

which is eaten by the farmers and cattle-keepers participating in the fire-festival around the month of May is marked and the unlucky individual who takes this piece was till recently required to leap three times through the flames. Allchin (1963) holds that "there is a hint in this part of the festivities of a former prevalence of human sacrifice."

Gradually the futility of this superstition was realised and the practice of pouring human blood into the agricultural field abandoned. Through observation and experimentation the truth dawned on man and he discovered, by steps, the need for tilling, watering, and manuring the land and providing it with adequate light and air in order to have a rich harvest from the plot containing the seeds he had sown. He also learnt the art of using various tools and animals as aid in his agricultural endeavours and realised the need for protecting his crop from harmful agencies, living and non-living, like the scorching sun, stormy wind, rising floods, rats and mice, hares and deer, buffaloes and elephants, birds and locust, and so on. With the advancement of science he mastered better techniques and invented more effective tools which brought about gradual revolutionary changes in agriculture.

Archaeological evidence indicates that societies which had achieved some amount of sedentary life through intensive collection of wild foods made the first use of cultivated plants (Encyclopaedia Bri-

tannica, Vol-1). The fear of starvation goaded man to store food for future consumption in hard times and lean seasons. Nature, herself, which is aptly described as "the best book" to read, may have taught man the art of hoarding in imitation of insects like ants and bees. Now, agriculture provided him with a grand opportunity and an enormous scope for storing up food for future. It also turned him into a "settler" from a "nomad", because he had to take care of his agricultural land and wait for the harvest.

What, then, are the psychological foundations of agriculture? Number one is the instinct of gusto or hunger and the fear of starvation. This has impelled man to find out means for easy procurement of ample food and one such means is agriculture.

Number two is his observation of natural phenomena, like germination of seeds and conditions conducive to germination and growth of plants. One wonders at the variety of things—vegetables, animals, birds and fishes of kinds uncountable, to mention only the chief natural products that man uses as his foods. All products of Nature are certainly not suitable for the human system—some are poisonous and harmful, some again are not edible. So, there must have been selection of a kind and it is very likely that man's observation of other creatures helped him a lot in this regard. He had watched birds, apes and other animals in

his neighbourhood use certain items as food and knew them to be worth-eating. His curiosity, number three, must have also helped him select some of the food items. The colour, smell, and touch of certain things, such as fruits and roots, may have attracted and allured him to taste them. In some cases, he might have also done some sort of experimentation on birds and animals—scattering the untasted articles before them to eat and observing their effects—in the selection of food materials.

Some other important psychological bases of agriculture are the instinct of imitation and the faculties of memory, imagination and reasoning. Man, as has been said above, seems to have learnt the art of food-storing from the tiny creatures like ants and bees. Imitation of other creatures and also of one another helped him, too, to extend and enrich his list of food items. Memory of his past experiences always guided him in the choice, combination, and use of stuffs of various kinds to be taken as food. And his insight, imagination, and reasoning incited him continuously to launch on newer experiments resulting into the surprising progress in the field of agriculture in our times.

Man's ever-growing wonderful scientific achievements in which his imagination and ability have reached their culmination have brought about revolutionary changes in modern agriculture. Use of atomic energy for long preservation of cooked and processed foods, fruits, and vegetables at nor-

mal room temperatures and of radio-active atoms for understanding, exploration, and control of the processes of animal and plant life (Khanna and Yarbrough, 1966); increasing crop yields through genetic up-grading, carefully determined order of crop rotation and application of proper fertilizers (Nanda, Dec. 1969); production of high-yielding corn varieties like Sonora 64, Pitic 62, Penjamo 62, Mayo 64, and Lerma Rojo 64 of America (Cannon, Jan. 1969), Mironovskaya-Yubileynya, Saratovskaya-29, Bezostaya-1 & 12 of Russia (Soviet Land, March 1974), ADT-27 (Span, Jan. 1968), Jaya, Padma, and Kalyan Sona (Nanda, Dec. 1969) of India, and IR-8 produced at the International Rice Research Institute at Manila (Nanda, Dec. 1969); use of X-Ray and gamma rays for sterilisation of harmful insects (Khanna and Yarbrough, 1966) and invention of powerful insecticides and pesticides; freeing land from soil salinity and making it suitable for cultivation (Sharma, June 1972); electrification, and mechanisation of agriculture (Kochenov, Dec. 1973); massive production of mineral and chemical fertilizers (Hoopes, April 1968); scientific care of cattle and their qualitative improvement through cross-breeding (Cockrill, June 1968; Nanda, Dec. 1968; Khanna, Sept. 1971; Khodosovsky, April 1974)—these are only a few of the glaring examples of man's scientific thoughts put into agricultural practices.

More wonderful, perhaps, is man's accumula-

ting success in freeing agriculture from its age-old dependence on climatic conditions, raising crops in untilled lands, and exploration of agricultural possibilities in different areas of the earth's surface with the help of multi-spectral images, covering even 10,000 square miles at a time, taken from high altitudes of space.

It is reported that everything is being done in Russia to ensure that the work of the farmer does not depend on climatic conditions (Umakov, Aug. 1973) which are "really most adverse" in that country (Strelyany, Aug. 1974). Results of such endeavours were clearly reflected in 1972 which "was an exceptionally dry year" and also in 1973 which was "by far not the best year according to weather conditions" when the crop yields were tremendously high and far exceeded the average of the preceding few years.

"The concept of no-tillage farming is based on the premise that if nature can grow luxuriant vegetation such as forests without tillage, it should be possible for man to grow food crops without ploughing or at least with minimum use of the plough." (Gupta, April 1972). This system, developed in America, has a great potentiality. Researches are being conducted for making this system adaptable to various agro-climates and extending it to additional undulating lands covered with weeds by concomitant use of proper herbicides. It has been shown that this system "reduces soil losses by as

much as 95 per cent" and is "particularly beneficial during dry years when the moisture-conserving surface residues retard water runoff and reduce evaporation."

Multi-spectral images taken from space platforms orbiting the earth at a great speed are a source of interesting details recorded with astonishing precision about the agricultural conditions upon the entire earth. This has been nicely described by Simmons (Dec. 1971) in the following words: "Not only is it possible to distinguish between fields of maize, oats, sorghum and wheat but it is also possible to distinguish between healthy crops, trees and other vegetation, to predict yield and—in a broad sense—to inventory and monitor overall land use with a high degree of precision over the entire earth .. Multi-spectral images covering 10,000 square miles at a time can readily distinguish freshly ploughed fields, on a daily basis if necessary, to provide useful information on the geographical pattern of fertilizer demand, for example.. Detailed temperature and moisture measurements from space can assist in selecting the optimum time for planting crops. Space surveys can indicate when land is being over-grazed or under-grazed and even keep track of the movement of locusts and other pests."

Man's insight into the mechanisms of Nature and his skills in translating his knowledge into action thus form a great psychological foundation of agriculture which is sure to flourish more and more with greater and still greater human achievements in the realm of sciences.

CHAPTER II

IMPACT OF AGRICULTURE ON HUMAN CIVILISATION

In olden days, prior to the discovery of agriculture, man led a nomadic life. For food he used to depend on jungles abounding in fruits, roots, birds and animals, and on lakes and rivers rich in fishes, crabs and such other aquatic creatures he was fond of eating. He had another source of food in the stock of domesticated animals, like goats and sheep, he had captured and tamed—a stock which also increased its size through reproduction. When the store of food in the near-by jungles and rivers became leaner or got exhausted and also the leafy herbs and the green grass in the close-by fields were eaten up by his herd of tamed animals, the primitive man had to leave the place for another site suitable for him. Thus he had to wander from place to place in quest of fresh woodlands and green pastures, quite now and then.

It is agriculture that fixed man on to a spot beside the plot he used for cultivation. Thus

settlement replaced wandering. He had to settle, because he was required to toil on his land, constantly look after it, guard it against harmful elements, and wait for the crop to grow and be ready for harvesting. He also discovered that the same plot of land could be used for many yields by turn. Besides, he felt the need for hoarding grains for future use. Thus he developed a sense of attachment and possession in regard to his land. All this changed his entire mentality, so to speak. He didn't now feel any need for moving about; instead, he found permanent settlement a dire necessity. Thus family life began and villages began to spring up. This urge for settling down on a particular spot beside one's own plot of land and in the midst of the members of one's own family has been reflected in sayings like: "Happy is he who hasn't got to go abroad."

According to a school of thinkers (Masani), marriage and family life were unknown to the primitive tribes. All the men in a tribe could mix with all the women and the children they begot belonged to the tribe as a whole. With the dawning of the sense of private ownership in man there arose the need for having under his own control a steady supply of manpower to be engaged in the field. For this reason, a man now entered into marriage with one or more women with a mind to have as many children as possible so that all his wives and children could be engaged in cultivation.

For the same reason the joint-family system also came into vogue. Not only the parents and their children lived together, but also the wives and children of their grown-up sons continued to live under the same roof. This introduced the custom of inheritance of private property from forefathers which later became a law. Family which is the unit of modern society was thus a gift of agriculture to mankind.

It is likely that most of the members of a particular clan settled on the same territory that offered sufficient land for cultivation. Their families began to live in close proximity so that they could collectively save their lands and crops from common enemies like wild beasts and wandering invaders. Thus villages came into existence. The people of a village developed a feeling of solidarity based on common interests. They met and sat together and racked their brains for arriving at solutions of their problems, both agricultural and social. Customs and manners were gradually evolved through lots of trial and error. Folk-moots were formed with representatives to effectively deal with questions of dispute and draw up programmes for common prosperity. Thus were laid the foundations of the modern society.

In days gone by when cultivable lands were available in abundance and the size of population was small, each family felt a need for increasing its size. Women who gave birth to larger number

of children were more appreciated and rewarded and those who were not so fertile were decried. Evidences to this effect are found in respect of Germany, Russia, France, Egypt, Iraq, India and China in the laws and literature of these countries (Masani). This need for more manpower to be engaged steadily in the land under cultivation also gradually brought in the system of slavery in many parts of the world. Things, however, began to change with the population growing at a rapid rate, gradual division of land among the descendants, diminishing return from the land owing to decrease in its fertility, dearth of arable land due to establishment of fresh villages, towns, cities, plants and factories, and the like. And in our times we see the size of families gradually shrink, the solidarity among neighbours—that zestful warmth and affection—steadily vanishing and turning men into “egoists”, and the system of joint-family losing its meaning and attraction. Thus the very structure and nature of our social life seems to have been largely influenced by agriculture and its effects.

Agriculture, however, has its influence not only on our social life, but also on all other spheres. The wandering man was in constant anxiety for procurement of food and had practically no comfort in life. Agriculture relieved him of this anxiety and offered him the comforts of family life. This not only satisfied his hunger and relieved him of his tension caused by uncertainty of food but also gra-

tified his instinct of acquisition on a mass scale. He now had enough free time at his disposal which he could devote to fruitful thinking that underlies all progress and advancement of human civilisation.

He invented better tools and devised more effective techniques for bringing about improvement in agriculture. He engaged animals in tilling the ground and carrying the harvest, dug up wells and canals for irrigation, discovered natural manures and produced mixtures for sustaining and improving the quality of his land, raised granaries with better measures for preservation of his surplus crop and so on, and thus science and technology started only to thrive steadily with the passage of time.

Man could also engage himself with greater devotion to the enrichment of his finer sentiments and creativity by indulging in pursuits relating to religion, painting, dancing, singing, story-making, etc. during the leisure hours agriculture had brought him. As has been remarked in the *Encyclopaedia of the Social Sciences* (Vol. V, 1953), "Rituals connected with agriculture and other cults have given rise to theatrical drama and comedy. Festivals originally intended to promote the activity of nature by sympathetic exertion on the part of the participants have tended to be valued for their own sakes as dances, athletic contests and sports. The vestments, disguises and ritual symbols, which at first possessed a functional magical significance,

have given rise to pomp, decoration, ceremonial and display that are enjoyed on their own account." Thus agriculture helped enormously in laying the foundations on which the grand edifices of our philosophy, theology, art, science, and literature are standing today.

It is agriculture which also led to the development of commerce and business. Men began to buy things they themselves did not produce in exchange of their surplus food. This also encouraged division of labour—some people producing one kind of articles, and some others, other kinds.

Thus different callings or occupations were created and common market places were organised where people of the same or different villages gathered with their produces for buying things from one another. This is how commercial transaction started among the people of a locality. And we know this system of commercial transaction has gradually improved, a common medium, i.e. money, has been evolved, and the local market has ultimately found its exalted image in the world market consequently on progress in the system of communication among the people of different parts of the world.

We may, therefore, say in brief that all that human civilisation consists in owes much, directly or indirectly, to agriculture, which is indeed a great discovery ever made by man.

CHAPTER III

MODES OF LAND OWNERSHIP AND THEIR PSYCHOLOGICAL IMPLICATIONS

A wealth of information regarding various systems of land tenure prevalent among the tribal people of different parts of the world has been collected by ardent researchers (Encyclopaedia Britannica, Vol. 1). These systems have been transmitted from generation to generation since the discovery of agriculture down to the modern times.

The sociological concept of land ownership has its origin in actual use of a plot of land brought under cultivation by a person and his family. "The land I use is mine" was the psychological theme. This feeling of ownership was based on some practical considerations. It is the man, and his wives and children, who laboured hard on the land, nourished the plants, and saved the crop from damage and destruction. And when he himself did all this who else would possess the land? It was the yield of land that sustained him and freed him from the fear of starvation. Naturally, there-

fore, the land was considered as an asset and a valuable treasure to possess. Not only that, man also gradually realised the commercial value of agricultural products which made it possible for him to purchase other commodities which he needed for better living. All this naturally made him selfish about the land he used for cultivation. And "use rights" were ultimately transformed into permanent land holding. The practical considerations that led to private ownership of land were supplemented by superstitions of various kinds conveniently, though perhaps unconsciously, developed for the purpose. For example, many primitive communities have developed a strong attachment to their land because they believe that their ancestors emerged out of it and were also buried in its bosom. The Tallensi of Ghana regard their inherited land as a sacred trust from their ancestors. To sell the land is, therefore, a crime, a sacrilege for them which, they believe, will bring about punishment in the form of death to be inflicted supernaturally. Likewise, the Bemba paramount chief will not leave his territory for that would affect the fertility of the land.

However, although the primitive man was conscious about his ownership of the land he cultivated, he was, nonetheless, quite liberal about the lands that were lying unused. Each had equal right on unused lands and any member of the society could acquire any portion of such land for

cultivation. This was so, because arable lands were abounding in those days. Among the Neur of the Sudan who live in areas where agricultural lands are plentiful any person can cultivate any land not used by others.

With increase in manpower in the family and with appreciation of the tremendous commercial value of agriculture man's greed for land went on increasing. Each tried to grab more and more land in order to have a greater produce. This gave rise to different economic classes among men. People with more land became richer and more powerful and those with less or little land were the poor and the weak. When the arable lands in a territory got exhausted by private ownership quarrels over the possession of lands arose. This necessitated institutions for settlement of disputes. Strict measures against transfer of ownership had also to be adopted.

The lineage head was given the powers to function as chief of the group with titular control over all the lands in the territory which he declared as his own. The chief, as is found even today among the African Bantus, however, determined the use of his land by allocating sections to his headmen who, in their turn, reallocated the same to individuals. Thus the rudiments of monarchy and the system of transfer of control by the chief or the king to intermediaries (like the lords and zamindars of our times)

were formed.

The ownership of land, in a primitive system, was transmitted to the children of the owner, particularly to his sons, where the inheritance was patrilineal. A married daughter and her sons could, however, cultivate such land but their rights to the land would expire the moment she died. Where the system was matrilineal the rights were inherited from the mother and the control over the land which was often administered by men passed on not to their sons but to the sons of their sisters. Among the Nsaw of the Cameroons, the women also have rights on farmlands similar to that of men. A married woman enjoys ownership of lands separate from that of her brothers and husband and her rights are transmitted to her sons and daughters. In some communities like the Garia of New Guinea a daughter does not normally inherit lands except when there are no male heirs and in such cases her rights are passed on to her sons.

In many primitive societies permanent alineation of the rights in land from the lineage is strictly prohibited except under very few circumstances such as in the form of dowry or compensation for homicide. Selling out lands is considered as a sacrilege in such societies. Temporary alineation is, however, more common. One may borrow land from another by offering the lender an initial gift and agreeing to provide him with a certain portion

of the produce, which is the beginning of tenancy in cultivation. Temporary alination also occurs when one is in need of liquid assets. The person deposits his land, or part thereof, with the lender as security for repayment. He gets back his land only when he makes full payment of the loan he has taken. Thus how originates the system of pawn-brokering or money-lending which has brought about complete ruin to many families of farmers in our times, because the conditions (for example, interests at very high and complex rates) associated with the loan had been such that they could hardly be fulfilled by the borrower and so he had to ultimately lose his land.

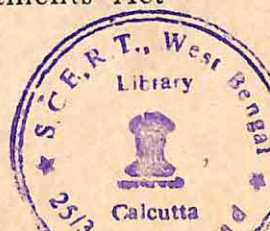
In modern times we see three broad types of land-ownership, viz., private or personal, collective, and public or governmental. In private ownership, holders of vast tracts of land lease out sections to tenants, and the tenants to sub-tenants, and so on until we come to the day-labourers who themselves do not possess the land but cultivate it for their employers on periodical wage basis.

Very big holdings are often unmanageable by the owners. They may not have the desire, ability or capital required for improvement of the land. This naturally impedes the progress of agriculture (Encyclopaedia Britannica, Vol. 1). Such a state of affairs was prevailing in England, for example, till the latter part of the nineteenth century. In 1907 the Small Holdings and Allotments Act

C.E.R.T., West Bengal

Date... 15-7-85

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was passed to empower the County Councils to purchase lands from the landlords compulsorily, improve them, and sell them out to individuals, cooperatives and associations. Similarly in Germany, the Laws enacted in 1890 and 1891 give powers to the government to buy lands from big land-owners and make small allotments to permanent settlers (Savkar, 1963).

Small lands, gradually fragmented through division among the descendants of the owner, are also an impediment to agricultural progress. This causes not only gradual shrinkage of the size of the land which comes to the descendants of subsequent generations but also much wastage of the arable land which is progressively eaten up by the boundaries and barriers erected for demarcating one's share from another's, rendering the residual land unsuitable for application of modern methods of cultivation.

Where the tenancy is valid only for a short period and there is no security of tenure, the cultivator cannot identify himself with the land and lacks in incentive to improve his holding. Often the tenant is required to give a fixed proportion of the crop after each harvest to the landlord, but the latter never extends any help to the former in the matter of improvement of the land. In such cases, the lot of the tenant is likely to be awfully miserable. He may not have enough money to spend for betterment of the land, and even though he has,

he may not have the desire to incur the expenditure, for he knows the land is not his own and to produce more is to give more to the landlord who hasn't had any share in the amount spent for improvement of the plot. Thus after giving the fixed quantity of crop to the landlord he will have a small quantity left for himself—a quantity which will gradually become smaller and smaller due to diminishing return of yield. Naturally, therefore, he has to borrow money from money-lenders at exorbitant rates of interest and thus he begins to dig his own grave. To save the cultivator from ruination and to improve the productivity of his plot it is thus necessary that he should have permanent and exclusive ownership of his land and be given facilities for its improvement.

The two great world wars showed how vital the part played by agriculture is in the life of a country. Land-tenure reform was, therefore, a must in many parts of the world. Registration, consolidation of holdings, redistribution of land, improved leasehold arrangements, control of rent, and changes in land taxation were some of the measures adopted (*Encyclopaedia Britannica* Vol.1).

Agriculture on the cooperative basis is being encouraged in many countries now-a-days. Individuals have limited resources. Besides, individual ownership of lands leads to its gradual fragmentation with all its evil consequences. Hence it is thought that if some people combine their resources

and cultivate a large plot of land, commonly owned by them, the land would be better maintained and yield a greater produce. As in the case of individual ownership, collective ownership will also promote identification with the land, and encourage a sense of healthy competition among different cooperative farms in the locality. However, it seems the best form of collective farming is that in which all the partners have equal share in the capital and thus equal share in the produce also. In that case, each will have equal interest in the improvement of the land. And if credit is taken by them from external sources for investment in the land all the partners, having equal share in the produce, will remain equally liable for repayment of the loan and this sense of joint responsibility will result in proper use of the credit for improvement of the common farm.

In some countries steps have been or are being taken to nationalise all the agricultural lands and to vest the ownership in the Government or the State. In such cases agriculture is a state enterprise and the cultivators are to work for the state and the nation as a whole. A great merit of this system lies in the availability of vast resources of the Government for improvement of agriculture, but its success largely depends on the efficacy of the measures taken for bringing about identification of the individual cultivators with the state interest. Work under compulsion is likely to

generate discontent and cause indifference to duty amongst them. The mode of distribution of the produce, while some of the citizens will work in the field and many others will remain engaged in other important activities—and even all of those who will work in the field will not, for very practical reasons, put in the same kind and amount of labour and work with the same degree of efficiency—will also act as a powerful determiner of success of this system. As a matter of fact, acute problems arose in Soviet Russia when the commune system of agriculture was introduced in that country. “The problem that arose in this connection was whether to pay for collective labour according to the number of collectivised implements of production, or according to the number of members in the family, including children and dependants. Another alternative was to pay only those who worked, but how? For the ability, skill, and zeal of each person differed. In some villages peasants set up communes where, irrespective of the prevailing situation, they divided their joint income equally among all members of the commune. Despite all its good points the idea of the commune had to be dropped, because the indiscriminate approach to individual performance stifled the incentive of those who expected better remuneration for better work.....The peasants were able to see for themselves that the answer was the collective farm which served both their own in-

terests and the interests of their fellow villagers, too" (USSR—Agriculture, 1973).

In Russia the appearance of collective farms started soon after the October 1917 Revolution (Zelenin, Oct. 1973), but their multiplication was very slow at the initial stage because of the psychological fixation and inertia of the peasant who being "accustomed for ages to work on his own plot of land" was "slavishly loyal to individual farming." When, however, the peasants found that their concerted resources made it possible to raise the necessary capital to a considerable extent resulting in much higher agricultural outputs than in individual farming this system gained quick and rapid popularity. Not only this. It, in fact, "brought a new mode of living to the countryside. It rapidly changed the entire tenor of village life. Schools, medical establishments, clubs, libraries, shops and stores were built in villages." The success of collective farming was so great that "as many as 1,100,000 individual households joined the collective farms all over the USSR in the last four months of 1930" (Pavlov, March 1974).

In recent years, greater cooperation in the field of agriculture is being ensured in Russia through amalgamation of agrarian cooperatives, state farms and state industrial enterprises, that is, through establishment of agrarian-industrial complexes in order to pool together their man-power and material resources with a view to obtaining better

results in all the participating enterprises.

Man is a bundle of contradictions. He has both animality and rationality within him. He has opposite propensities ingrained in his nature. He is selfish and cooperative at the same time. He is both self-centric and social. He wants both to own and to share. Systems which are built upon considerations of only one side of his character are, therefore, likely to bring about complications of various sorts. On the other hand, systems which will provide for satisfaction of his opposite tendencies in the form of compromise of some kind may be expected to work better.

CHAPTER I V

THE LIVING FRIENDS AND FOES OF THE PEASANTS

Prior to the discovery of agriculture man lived on beasts, birds, and fishes he killed, besides fruits and roots he collected from jungles. In order to have a ready stock of food with him he began to capture, tame and raise animals. This was the beginning of animal husbandry.

When he devised the plough for tilling the ground and learnt the use of manure for restoring fertility of his land he procured grains at increasing rates and this diminished his urge for cattle-raising (Encyclopaedia Britannica, Vol. 1). Nevertheless, he found many of the domesticated animals quite useful in cultivation. The plough he devised had to be pulled with great vigour for deep tilling of the land. He now used animals like oxen, buffaloes, horses, donkeys, and in some cases even camels and elephants for this purpose. Such practices are found to be in vogue even today in many of the underdeveloped and developing countries of

the world where extensive use of machines like tractors has not been possible for practical reasons. Such animals were and are being used not only for drawing the plough but also for carrying cartloads of seeds and manure to the field and the harvest from the field to the house of the farmer or to the market place. They are also being used for drawing water from wells and ponds for irrigation of the land and also for threshing or separating the corns from the stalks. Such animals have proved essential and indispensable as aids in transport in many of the areas of the world where the blessings of science have not yet reached in any mentionable measure.

Man discovered not only a power in his cattle but also a rich resource. He found that the stool, urine and bones of these animals could be used as good manure for his land.

However, useful though these animals are to the farmer, they are no less harmful to him, too. They help in turning the grey lands into green fields, but, at the same time, they are very much fond of eating the plants, and the corns they help themselves to grow. It is, therefore, necessary to protect the field from their intrusion. Fencing the field is an effective measure, but it is not always possible for many reasons. Vastness of the agricultural land lying about villages and towns, segmentary outlook of the farmers and their interest only in their own plots which, in most cases, lie not at the

periphery but in the core of the area, and above all their financial insufficiency often stand in the way. The fences erected by individual farmers around their own plots may not also be always so strong as to resist the attack of these animals.

The cattle that are great friends of the cultivator have got to be well-kept and well-fed in order that they may be more serviceable. Sheds, folds, and stables with enough space and adequate sanitary arrangements should be raised for their accommodation; they should be provided with good fodder at home and green grass in pasture lands for free grazing; there should also be sufficient provision for their medical care. But all these "shoulds" cannot be met in many cases for many reasons. For example, there has been a gradual shrinkage in the areas used as pasture lands because of development of new townships and plants and extension of agricultural projects. The existing pasture lands are also in many cases losing their fertility simply because they are no-man's lands and thus go uncared for. One of the age-old practices was to drive the cattle to the pasture land in order to feed them and at the same time to save the plants and the crops from their attack. The barren pastures have now no attraction for the cattle and they, therefore, easily get tempted to steal into the corn-fields in search of food. Veterinary services are, again, not made available in the remote villages in many countries and, as a result, even the farmers

who can afford to purchase such services for their cattle fail to do so. Cultivators who are economically unsound cannot provide healthy accommodation and sufficient fodder to their animals. All this has been responsible for cattle-diseases and cattle-death at high rates and for set-backs in agricultural progress in most of the underdeveloped countries of the world.

Besides the cattle, many other creatures also play significant roles, benign or harmful, in cultivation. The bees and the butterflies help in flowering and fruition of the plants. The earthworm loosens the soil and renders it suitable for sowing. Ants and termites eat into the juicy roots and weaken them. The dog guards the crop from cattle, jackals, deer and such other theiving animals. Birds like sparrows, hens and crows eat up the corns and destroy much of the crop by tearing off grains from the stalks and scattering them over the ground. So do also the mice and the hares. Insect pests of innumerable kinds are responsible for diseases in the vegetable kingdom.

There are many popular methods among the cultivators for dealing with the enemical creatures. Killing with substances and weapons like stones, heavy logs of wood, arrows, spears, slings, guns, etc. or by sending out hunting hounds after the intruding animals or mixing poison with the food and water kept in the field for alluring them is a way of dealing with such enemies.

Scaring away the intruders is another method. The "scare-crow", a universal device, is an age-old instrument for keeping crows and other birds away from the crop in the field. Driving away herds of boars, elephants, wild buffaloes and such other animals by loud and continuous beating of drums and making big fires beside the corn fields are some other techniques. Often cultivators also make small huts or "observatories" beside the field or on tall trees in the vicinity to keep a constant watch upon the intruding herds. Whenever a herd is seen approaching the field the inmates of the huts make a shrill loud sound of call or beat their drums which invites others in the village to rush to the field prepared for an encounter with the intruders.

Capturing the invaders, like birds, hares, and boars, with the help of nets and traps is also a measure adopted in some cases. Sometimes ditches are dug around the field or at the entrance point and hidden under camouflages. The intruder falls in the ditch unawares only to be killed or caught by the farmers.

Diverting the attention of the intruder from the corn to some other thing is also practised in some cases. For example, sugar, honey or some other sweet substance is sometimes heaped on a spot near the field. The ants congregate around these substances and thus the plants in the field are saved from them.

Science gradually came to the aid of the culti-

vator in this matter. Reduction of agricultural losses from insects like the housefly, mosquito, and grasshopper that carry germs damaging not only to the crops but also to the live stock and human beings has been a subject of research in agricultural science. Discovery of insecticides, like DDT, has enormously strengthened the hands of the cultivator in saving his plants and crops from innumerable insect pests. Malaria, filaria, trichinosis and such other diseases carried by mosquitos and hookworms have been brought under effective control as a result of great discoveries by agricultural scientists. But what is more important is to make these fruits of research available to all cultivators and to educate them in their proper use.

Using one insect against another for controlling the latter is another scientific method practised in some cases (*Encyclopaedia Britannica*, Vol. 1). A similar practice also obtains amongst the cultivators with regard to some animals that damage their grains in the field, in the granary, or in the farm yard. Engaging cats against rats and dogs against jackals and cattle is a common practice. In many regions of India the big serpents that reside in holes in the corn field are venerably worshipped as divine representatives of the Lord of the Field (Kshetrapala), obviously because they devour harmful insects, rats and birds and bite big animals to death when they visit the field and attempt to destroy the crop.

The vegetable world and the animal world being closely interlinked the farmer cannot afford to lose sight of the living things—big or tiny, beneficial or injurious, domesticated or wild, innocent or ferocious—that abound in his neighbourhood. The farmer is, in fact, very much vitally and vigorously concerned with these specimens of life. They appear to have a great influence on his mind too. His intense love for his cattle whom he regards no less dear to him than his near ones and often even talks to with great fondness, the warm anxiety he feels for their well-being, their place and that of other animals in his aesthetic imagination, the festive occasions he celebrates around his cattle and other domestic animals, his fear of wild beasts and his courage to fight them, his religious sentiments about some of these animals, his intimate knowledge about the nature and habits of the creatures he encounters in his everyday life all point to the very real and compact influence that the animal world profusely exerts on the mind of the farmer.

CHAPTER V

AGRICULTURAL LABOUR AND SOME RELATED PSYCHOLOGICAL PROBLEMS

Different kinds of workers are found in the world of agriculture (Encyclopaedia Britannica, Vol. 1). For instance, the European peasant or the United States family-type farmer himself works in his fields and cares for his animals. In such cases where agriculture is a family affair often the farmer, his wife and children all work in their fields on part-time basis in slack seasons and on full-time basis in busy periods. Secondly, there are the share-croppers in many parts of the world who cultivate the land and share the produce with the owner. Thirdly, the work is done by labourers, hired seasonally or on a permanent basis, in many cases. In some countries students work in farms and fields during holidays and vacation periods with a mind mainly to gather experience and earn some money. In Turkey and some Asian countries owners of small holdings supplement their income by working in others' fields as

wage-earners. Some of the hired workers have other employments in slack periods, while some others have no such employment and they chiefly depend on the wages they earn by working in others' fields during the busy season. A good section of the seasonal workers migrate from one region to another for harvest work which is the main source of their income.

Hiring of labour for agricultural work is relatively less practised in typical European peasant countries, and in the United States and Canada where family-type farming is the rule. Hired labour is less important also in Japan where small-scale farming is the common feature. In Soviet Russia those peasants who themselves work in their lands without hired labour are encouraged and supported by the Government (USSR-Agriculture). However, hired labour in agriculture is high in countries like Argentina and Chile which have taken up projects of large-scale farming. In Great Britain also it is very high because there is a great demand for labour for growing intensive crops like vegetables.

In India all such work as tilling, sowing, planting, harvesting and the like, connected with agriculture is largely confined to a particular class of people. Owners of lands who do not belong to this class hire services on tenancy basis or on the basis of wages. Those who belong to this class and own lands, except the rich amongst them, themself-

ves work in their own fields with the members of their family—men, women, and children. Whenever necessary, they also engage hired workers to assist them in their work. Most of the hired labourers are either landless or possess very small holdings which are too inadequate for the maintenance of their families. Big land-owners engage a regular staff of hired workers throughout the year for looking after their cattle, growing garden vegetables, making small and occasional preparations for cultivation such as exposing the seeds to the sun with a view to keeping them free from infection, repairing the plough, sharpening the sickle and other instruments, putting the cart into order, chopping up wood, fencing the garden plots, and so on. Such hired workers become members of the owner's family, so to say, and not only get food and clothes, besides wages, but also enjoy great affection and even respect in many cases. Till the other day when such hired workers died or retired, their sons used to take their place in the owner's house. Recently, however, things have started changing with the spread of education among the cultivators and creation of fresh opportunities for work in factories and offices. Besides this regular staff of hired workers, a band of temporary workers are also employed by the owner at the time of tilling, sowing, planting, and harvesting work. They are engaged mainly on a daily wage basis. They go out of employment as soon as the seasonal work is over. A

good many of these seasonal workers migrate from place to place in search of work. Like migratory birds they, in most cases, visit the same places and work under the same employers from year to year. Often they move in groups. Sometimes the entire family of the migratory worker accompanies him in such sojourns. They work not only in the field but also in the household of people who engage them for this kind of work. Sometimes, again, they find a new market at the places they visit for their hand-made products of artistic quality and utility value such as sheets of bamboo, mat, and cane fibres or of palm leaves ; clay dolls ; caskets and baskets with designs ; nets for catching fish, and the like. They try to earn enough money to go with for the whole year in as many ways as possible on these occasions.

The efficiency of the Indian peasants is something worthy to note. They till thousands of acres of land, sow seeds, plant saplings and turn the vast expanse into a green stretch that kisses the horizon, all within an unthinkable short period and mainly with the aid of their plough and cattle ! They harvest the crop also with magical promptness. Such is the case not only in India but also in other countries of this sub-continent and many other underdeveloped regions of the world. All this indicates a great potential of agricultural labour which may work wonders with adequate education and equipments and free the human race

from starvation.

The problems of the landless labourers and also of those having small holdings are varied and grave. Where the supply of labour is greater than demand, and this is so in many cases because of a higher birth-rate among the people of this class, and also where the paying capacity of the employer is little and limited, as with small cultivators in particular, the wage-rate is low, sometimes too low to enable the labourer to make the two ends meet. Here it should also be noted that if the farmer is heavily taxed he cannot pay more to the labourers he engages. As observed by Dutt (1963), "... where the cultivator is lightly taxed, and has more to spare, he employs more labour, and labour is better paid," and, in fact, "a moderate and definite Land Tax is calculated to improve the condition of the entire village population, all .. who own lands and who labour on lands." Mechanisation and soil improvement through fertilizers are additional factors that adversely affect the wage-rate. For instance, Australia and Canada which produce surplus food stuffs were able to increase their yield with reduced labour by using better fertilizers and recovering more land for cultivation (*Encyclopaedia Britannica*, Vol. 1).

The problems created by low wages are often augmented by lack of other fruitful employments for the peasants during the seasons when there is no agricultural work to be done. Absence of auxiliary

sources of income only adds to the miseries and poverty of the poor peasants and thus seriously tells on their health and efficiency. This is not so with the permanent or semi-permanent industrial and office workers who have daily assignments at their places of work and whose income is fairly stable. This want of a stable income often keeps the poor peasant in constant tension and hankering which get released disproportionately in spend-thrift habits when he earns some money in the peak period of cultivation with the result that he finds his little earning spent out quickly, leaving no other alternative to him than to approach money-lenders demanding high rates of interest.

Another factor that affects the morale and efficiency of the landless labourer is his lack of interest in the land he works for. He knows it is not his property. He knows that he has no share in the crop the land will yield. He thus finds no joy or zeal in his work and, therefore, does not apply himself fully also.

Opportunities for work in plants and factories at higher rates of wages, even on a temporary basis, also allure the peasants in several cases. They find such other jobs more lucrative and lose interest in agriculture. This has a damaging effect on their agricultural efficiency which is reflected in their poorer performances whenever they return to the land in between their industrial employments. Not only that ; when peasants join factories as workers

they find it difficult to adjust themselves in their new environment and this affects their performance. If they are to be motivated in their new work in the factory their "cultural values", which are different, will have to be identified, analysed and properly utilised. H.L. Wilensky (Arensberg, et al, 1957) says, "Whether it be a Bemba tribesman who has come to work in a Northern Rhodesia mine and has not yet acquired the appetite for European store-bought clothes, or a Protestant Republican farmer who has come to work in an urban factory and has not yet acquired the taste for output restriction and group loyalty—the worker's cultural background obviously will shape his work conduct." Transformation of peasants into able factory workers will surely be rendered much more difficult when a peasant is forced by circumstances to swing between agricultural and industrial jobs with a high probability of losing efficiency in both the areas on account of divided interest and loss of practice effect.

Agricultural work, which has long been a family occupation, is now losing its fascination for such boys and girls of the peasant families as are receiving school and college education, as they find higher status and greater security in other areas. Thus the condition that young peasants profit by the experience of their forefathers cannot operate and, as a result, the run of ever-increasing efficiency through generations gets broken and interrupted.

It is being increasingly realised everywhere that the very survival of the ever-growing human race depends largely on the progress of agriculture and, as such, the condition of cultivators must be improved by all means. Accordingly, laws have been and are being enacted in different parts of the world for proper distribution of land among the peasants and steps are being taken for improvement of their economic condition ; for their professional education, housing facilities and medical care ; for providing them with credits at reasonable rates of interest ; and for their protection from hazards and exploitation of all kinds. Various means of stimulating the cultivators in their work are also being adopted. International Labour Organisations are operating to look after the interest of the world's cultivators of all categories. There can be no divergence of opinion that the sooner the condition of this vital class of people in a country is improved the better it is for the whole nation, better in all respects.

CHAPTER—VI

FESTIVE DAYS OF THE FARMER— A PSYCHOLOGICAL STUDY

As is observed by Allchin (1963), "The religious beliefs and practices of men have almost universally reflected concern for the continued success of their means of subsistence. Among agricultural communities a great part of folk religion is thus concerned with the earth, the crops and the elements."

We may thus expect that most of the festivities, ceremonies, and rituals in the world of cultivators will centre round their fields, tools, crops, and animals which they cherish so dearly. In connection with a survey of the world festivals, reported in the Encyclopaedia of the Social Sciences (Vol.V, 1953), it is observed that the agricultural operations are "associated with a series of ritual festivals." Such occasions and practices will quite naturally vary from country to country, or even from one region to another in the same country, due to differences in the cultural, social, climatic, physical, biological and economical factors peculiar to these areas.

The agricultural psychologist will find a wealth of materials of great psychological significance in his study of the festive days of the farmers in different parts of the world. Comparative studies will throw light not only on the peculiarities of mental life of the farmers belonging to particular regions, but also upon the common stream of psyche that characterises the farmers as a class and distinguishes them from people belonging to other vocations.

In the present chapter we shall mainly dwell upon some of the rites and festivals observed by the peasants of West Bengal with references to similar festivities in some other parts of the world and attempt a psychological analysis of these practices.

Kshetra-Puja : On the day the year begins cultivators assemble in their fields and worship the land. They collect heaps of hay and dry leaves, burn them up, and scatter the ashes all over the ground. The implications of this ceremony are quite obvious. It is natural that the cultivator will cherish a deep sense of reverence and gratitude towards his land and ascribe a degree of divinity to it, because it is his land which is the source and fountain of his subsistence throughout the year. Making fire in the field is perhaps a measure of destroying the weeds and harmful insects with the flame and smoke and scattering of ashes a way of fertilizing the land.

Allchin (1963) mentions a number of fire and cattle festivals among the farmers and cattle-keepers

belonging to different countries in Europe. He remarks, "It is also interesting to find that these festivals have transcended the bounds of geography, race and language and occur with many identical features among the Celtic, Germanic and Slavonic peoples." The peasants of northern and central Germany, on such occasions, collect fire-wood on hill-tops and set it on fire with the belief that brand from the fire will protect their houses from lightning and ashes of the bonfires will fertilize their fields, while, mixed with water, they will serve as a prophylaxis for their cattle. Allchin describes the fire and cattle ceremonies prevalent among the farmers and cattle-keepers of Scotland, Wales, Ireland, Poland, France, the Isle of Man, Italy, Greece, Morocco and Algeria held in different seasons and sums up with the remark that they all show some universal features, viz. magical kindling of great bonfires, dancing around and leaping through the flames, and driving of cattle herd through the embers. Processions and races with lighted torches round fields, pastures and cattle stalls also characterise many of these occasions. The fires, it is believed, will guard the observants and their cattle and crops against diseases, natural calamities, and evil spirits like witches and promote their fertility. While speaking about the Iranian fire festivals, Allchin holds the folk bonfires as being "survivals of an older seasonal rite, linked with the agriculture and economies of the societies involved."

Association of mirth and merriment with the commencement of work is an age-old practice. As has been pointed out in the *Encyclopaedia of the Social Sciences*, (Vol. V 1953), "Beginning of hunting, fishing, or plowing seasons, first-fruit and harvest, and totemic gatherings are the commonest occasions for festivals in primitive societies." Thus on the first day of the year the cultivator seems to purge his land of filth and germs, enrich its fertility and prepare for the work of cultivation through these rites. The first day of the year is chosen for the purpose, perhaps because those who introduced these rites perfectly knew that a good and joyous beginning is likely to bring about ultimate success and satisfaction—a belief which is consistent with the psychological law of primacy. It is for the same reason that we see people all over the globe greet the New Year on the day of its commencement. The belief is that if the first day of the year is spent in happiness the rest will also be spent alike. Hence the exuberance of mirth and merry making on this occasion. Likewise, the cultivator worships his land on the New Year's Day with the expectation that he will be favoured with a rich return of harvest in the days to come.

Ambubachi or Hal-rakshan: The farmer would not till his land on the seventh day of the first month of the rainy season, for it is believed that Mother Earth menstruates on this day and, as such, she must not be struck with any implement

whatsoever when she is so soft and tender. It shows the great care and affection the farmer bears for his land. The land which produces crops is naturally imagined as a female. And as a female, she will also menstruate. Unlike women, however, she is supposed to menstruate only for a day in the year perhaps because of the practical consideration that giving rest to the land for more than a day at a stretch on this account will cause enormous economic losses to the cultivator. The particular day was selected as the day of menstruation of Mother Earth, possibly because it was usually a day of considerable rainfall in the early part of the year. It is still believed, and often correctly, that this day will not go without a shower. The restraint on tilling of the land on this day is also an indication of the social rule that a man should not touch a woman in a state of menstruation. It may be noted in this connection that also in some other parts of the world, such as in Australia, "women are taboo during menstruation and immediately after giving birth" (Freud 1950).

Das (1966)—who collected his materials from sources like *Golden Bough* (Part I, Vol. II, Pp. 97-101), *Themis* (P. 385), *Encyclopaedia of Religion and Ethics* (Vol. V, P. 828), and *Rik Veda*—reports that the primitive men not only imagined the earth as a woman in view of her fertility and productivity but also believed that utterance of obscene and slang words and performance of sexual

acts on the field would warm up the earth and increase her fertility resulting in high yields of crops. They imagined the governing deity of the earth also as a lady. The Greek originally called her 'Garia'; later they gave her a new name 'Demeter'. The Romans called her 'Terra Mater'. In the Rik Veda (1/89/4) the Earth has been addressed as 'Mother'.

Imagining the land as a woman is also an instance of inheritance of the panpsychic outlook of the primitive man who considered the whole universe as something living. He personified all inanimate objects and ascribed to them such human qualities as were in agreement with the services they rendered to him.

Nal-Bandhan : In West Bengal when a woman carries for eight or nine months her parents, relatives and friends make her presents of various kinds to please her so that she may smoothly give birth to a healthy baby of high promise. The presents consist of articles she likes or desires to possess and especially of such food items as she is very much fond of eating. She is asked to express her desires which every one tries to fulfil. This is called the "Feed to Wish" ceremony (Sadh-Bhakshan). The cultivators of West Bengal observe a similar ceremony in respect of their land also. When the paddy plants are in blossom towards the last part of the autumn and the first part of the dewy seasons the cultivator makes a bundle of sundry materials like

arum, ginger, tamarind, keun flower (*Costus Specious*), etc., ties it to a tall reed, and plants the reed in his field accompanied by his friends and relatives. Then they all begin to chant verses every time wishing a rich crop. They say, "Oh, ye field ! We give thee such and such articles, mayest thou be pleased to bear good crops in abundance unprecedented." This ceremony also reveals the tender and affectionate attitude and soft sentiments of the farmer towards his land which he personifies and deems as his dear daughter. He does the same in respect of his land when it carries corn plants at an advanced stage as he does in the case of his daughter in full pregnancy. Desires, projected on to the field, are thus fulfilled through this ceremony with the expectation that she will be pleased to produce a rich crop.

In many other parts of the world also, trees and plants in blossom are treated as pregnant women, as reported by Frazer (1971). For instance, no one in the Moluccas will make any noise, carry any light or fire at night, or put on his hat in the presence of a blooming clove-tree lest the tree should be frightened, refrain from producing fruits, or drop its fruits before time "like the untimely delivery of a woman who has been frightened in her pregnancy". People of Amboyana will not fire their guns or make any other noise beside a rice field in bloom, because this will disturb the pregnant plants and lead to their miscarriage resulting in "all straw and no grain."

Chito-Samkranti : Another festival which aims at pleasing the field when the plants are much younger comes off on the last day of the first month of the rainy season, when cakes of a special type are prepared and ceremoniously thrown into the water collected in the field green with young saplings of paddy.

Langal-Puja : The plough which is still the chief instrument for land-tilling in most cases is worshipped with profound devotion before it is put to use for the first time in the year. Thus for the farmer nothing with which he is concerned is insignificant ; on the other hand, everything has a spirit which needs be evoked and appeased. He believes that blessing of all will be necessary for success of his endeavours. In fact, it is the efficacy of the blade of the plough on which the productivity of the land largely depends. The deeper the furrows, the greater will be the productivity of the land, for more fertile layers of soil, so long lying underneath, will be turned up and contribute to the growth of the plants. Thus the plough has much to do with the fecundation of the land and, therefore, it reasonably enjoys a great measure of reverence of the farmers.

In some parts of the world even the spirits of the dead ancestors are evoked and invited to partake of the enjoyment of the cultivators in some of their festivities. For example, as reported in the *Encyclopaedia Britannica* (Vol. 9, 1968), in the Trob-

riand Islands the farmers invite the 'baloma' or spirits of the dead to join them in their harvest festivities. The spirits are dismissed with the dancing and feasting being over. Thus cooperation is established between the living farmers and their dead ancestors. All this indicates the farmers' eagerness for procuring the blessings of all—living, non-living and dead that they are concerned with, with the expectation that this will bring them success and happiness in their endeavours.

Barham-Puja or Janthal: Sowing and plantation begin with the worship of the village deity, who, in many cases, is the Divine Mistress of Tigers. This indicates that at the time this ceremony was introduced most of the arable lands lay beside dense forests abounding in tigers and other ferocious animals. The practice still persists even though many of the forests have now been removed and tigers are no longer a threat to the farmer except in a few areas like the Sunderban Region on the Bay of Bengal.

Rivers studied the religious institutions and ceremonies of the Todas, a tribe of Southern India, and concluded that "the ritual has persisted while the beliefs at the bottom of the ritual have largely disappeared" (Allchin 1963).

Karhan: The farmers celebrate the day on which the work of plantation is completed. This day on which the first phase of cultivation is successfully accomplished is naturally a day of

great relief for the farmer. And this feeling of relief from tension and anxiety makes him sportive and jubilant.

Lakshmi-Puja : The cultivators worship Lakshmi, the goddess of wealth, in autumn, winter, and spring when three major crops of paddy are harvested. Wild merriments characterise each of these occasions. The winter worship of Lakshmi which takes place on the last day of the first winter month has a special significance. A casket (*Lakshmi-Jhanpi*) is placed upon a heap of paddy grains and wrapped up with a piece of red silk. The women folk decorate the place with beautiful designs made of powdered rice, pulses of different kinds, turmeric dust, etc. Then homage is offered with the blowing of conch shells, beating of brass plates and tingling of bells. After this a portion of the paddy grains is put into the casket along with pieces of cowry and sankha (small shells taken as tokens of wealth). The casket is then carefully kept aside at a safe place of the house, usually a high point of the wall, to be brought down and worshipped again in the spring time. This occasion is celebrated also by preparation of sweet cakes and custards of a large variety. The paddy of the casket is changed every winter when the major-most paddy crop is harvested. Rice being the chief food of the people of this Indian province, paddy is naturally regarded as the greatest treasure by the local cultivators.

The desire for continuity of affluence in their household seems to have been reflected in this system of preserving the casket of Lakshmi through years.

Manasa-Puja : The autumn worship of Lakshmi coincides with the worship of Manasa, the Divine Mistress of Snakes. The cultivators cannot ignore these creatures whom they both adore and fear. They save the crop from the intruders, but sometimes pose a danger for the cultivators and their cattle also. Thus they need be appeased and pacified. This need must have been much more keenly felt when the region was covered with dense forests in the long past.

Sukur-Hala or Sukra-Birha : Harvesting of the winter crop generally begins on a Friday. The cultivator makes a bundle of a few stalks he reaps. He worships this bundle and then silently carries it home on his head to keep it on the thatch of his house. Similarly, on the last day of harvesting a few plants are left untouched. On the day on which the entire crop is carried to his farm yard the cultivator pulls out these plants with some soil stuck to their roots and ceremoniously keeps them on the heap of corns in his yard. In the evening preceding the last day of the first winter month he worships these plants and prays for a rich yield from the stalks he has reaped from his land. He separates the soil from their roots and scatters it in every nook and corner of his house. This ceremony is known as **Kshetra-Barhan or Sar-Tola or**

Mohini-Puja. These practices evince the cultivator's desire for making a bridge between his field and household. He beseeches the goddess of wealth to come from the land to his house and fill it with affluence to the brim. His land, like his household, is thus an inseparable part of the cultivator's very being and existence.

Similar rites are also practised by the farmers in many other parts of the world (Frazer 1971). For example, in some parts of Russia the mistress herself reaps the first sheaf, takes it home, and places it near holy pictures. Then it is separately threshed and some of its grain is mixed with the seed-corn for the next year. In Aberdeenshire the last cut corn would be "dressed up as a woman and carried home with ceremony."

There is a somewhat similar practice amongst the German and the French peasants also. They bring the Harvest-May, which is a large branch or sometimes a whole tree, decked with corn-ears, from the corn field on the last waggon. The Harvest-May is then placed on the roof of the farm house for a full year, that is, till it is replaced by the next one. According to Mannhardt (Frazer 1171), the Harvest-May "embodies the tree-spirit conceived as the spirit of vegetation in general, whose vivifying and fructifying influence is thus brought to bear upon the corn in particular." This is clear in the Swabian rite in fastening the Harvest-May amongst the last stalks left untouched in the field.

Machan-Puja : The granary or store-house is also adored and decorated before the corn is poured into it and this also offers an occasion for profuse merry-making to the cultivator's family. The granary being the seat of Lakshmi has a sanctity that has to be maintained and never violated.

Navanna : It is also a grand occasion for rejoicing among the cultivators. Narayana, husband of Lakshmi, is offered a preparation of new rice boiled with milk and sugar and then people start eating the new crop of the year. This comes off late in the dewy season or early in winter when the peasants have brought the crop home from the field and are thus not only freed from anxiety for food but also surcharged with a feeling of possession.

Go-Puja or Garaya Utsav : The cultivators of India hold their cattle, too, in great esteem. This is quite consistent with the valuable services these animals render in their agricultural work. Specially the cow is so important and indispensable for them that they cannot think of doing without it. Cow slaughter is a taboo for the Hindu farmers for whom the cow is an incarnation of goddess Bhagawati herself. The farmers of West Bengal offer special respect to their cattle on particular occasions in the year. They wash their cattle, cleanse the shed, decorate and paint the animals, fondle them, worship them, and offer them plenty of delicious food on such occasions which generally fall in the summer, autumn, and dewy seasons.

On the last occasion which falls close to the on-coming winter, mosquitos are destroyed by smoke and driven away with drum-beating from the cattle-shed. The cattle, particularly bullocks and buffaloes, are collected in a meadow and let loose or at places tied against poles and infuriated by various means, such as charging, poking or introducing an innocent pig amidst them, possibly with a view to enlivening and activating the live stock of the village. Some of these occasions closely coincide with the birth day ceremonies of Krishna and Radha, regarded as incarnations of Narayana and Lakshmi, who were, it is believed, born in the epic period and belonged to royal farmer families having thousands of cattle in their possession. Their love and affection for the cattle has earned a legendary significance in this country. Allchin (1963) says that in India "in almost all the pastoral castes there is a traditional association with Krishna." One of the occasions, again, synchronises with the day of worship of goddess Kali, wife of Lord Siva who is also called the god of the field (Kshetrapala). It is interesting to note that the ox is imagined as the carrier of Siva. Thus selection of the days for greeting the cattle seems to be quite consistent with the mythology of the land.

Sometimes someone dedicates an ox to Lord Siva and leaves it to itself. It roams about at its will and has free access to all places. Such an ox is a taboo particularly for the farmers who will not

use it in their work nor even hurt or drive it away even though it does any harm to their crop.

As reported by Allchin (1963), in Madhya Pradesh among the Kunbi cultivators a cattle procession is organised on the last day of the first winter month (*Makar Samkranti*). The procession is led by an old bullock bearing torches tied to a wooden form fixed to its horns. The bullock is required to charge a rope of mango leaves held by two posts at a distance from the village. The procession comes back to the village after the rope-breaking ceremony is over. "This custom is supposed to ensure fertility and freedom from disease among the cattle in the coming year."

Decoration of the cattle on festive occasions is confined not to the Indian farmers alone. Allchin says, "This sort of painting certainly occurs outside India." The Masai, a cattle-keeping tribe of East Africa, for example, paint the horns of thier cattle in monochrome red or polychrome bands. Such painting of cattle seems to have been transmitted through generations from very ancient times, according to Allchin.

Gajan or Charak Puja : On the last day of the last month of the year the cultivators worship Lord Siva and engage in merry-making. In fact, all the village folk join them on this happy and gay occasion.

It is interesting to note in this context that the Sanskrit word 'Kshetrapala' which is another name

of Lord Siva, the god of the field, has also another meaning. It means 'cultivator'. In fact, the image of Lord Siva has perfect agricultural implications. He sits on the skin of a dead tiger, having a bugle (*singa*), a drum-let (*damaru*, an instrument used by snake-charmers for hypnotising snakes), an iron rod with three piercing spear-like prongs (*trisula*), a wooden vessel filled with water (*kamandalu*), and a healthy ox in his constant possession. He holds Ganga, the goddess of the river Ganges (who is conceived as one of his three wives, another being Annapurna, the goddess of food grains) in the tufts of hair on his head, while a large number of poisonous snakes move about gently and in a docile way all over his person. The agricultural implications of these symbols are quite obvious. Lord Siva, who may be well imagined as the father of cultivation in this part of the world, has killed ferocious animals in course of recovering cultivable plots of land from jungle areas; taken adequate steps for alerting his followers against intruders and scaring away the latter by using drums, bugles and spears; tamed snakes of the field whom he engages to frighten away such harmful creatures as may enter into the corn field; arranged for proper irrigation of the land by bringing mighty rivers under effective control and keeping reservoirs of ready water (*kamandalu*) for easy use; invented strong implements (*trisula*) for deep digging of the land; employed healthy studs as aids in cultivational

work like tillage, transport, etc. ; encouraged polygamy for solving the problem of manpower in agriculture, and, thus, ensured steady and regular harvesting of rich crops round the year which is symbolised by his marriage with Annapurna. And, in fact, Lord Siva has been depicted as an ideal farmer in the folk-literatures of Bengal like *Sunya Puran* and *Sivayan* (Bandyopadhyay, 1961). In *Sivayan* by Rameswar Bhattacharyya we find a detailed account of the agricultural activities performed by Siva and his associates.

Briksha-Pratistha : Planting a banyan tree and a peepul tree on the bank of a pond beside the field and giving one into marriage with the other is also a festive occasion at times for the farmers. In fact, these trees have certain peculiarities. They grow very tall and spread out their branches over a large area. Their shade is extremely cool and soothing. The weary cultivators, as well as passers-by, find an ideal shelter for rest and relaxation under them, especially in the summer season which is excessively hot in this tropical country. A combination of these two trees creates an atmosphere which removes the fatigue of the farmer and helps him restore his vigour more quickly and effectively. Planting of these trees in isolation is also done ceremoniously in some cases. Obviously for the above reasons these two trees are deemed as holy and divine and are consecrated in the above fashion to be worshipped as living deities and

preserved with all care. To cut off these trees, or even to chop off their branches, is considered as a great sin.

Frazer (1971) cites a large number of instances of tree-worship prevalent in different parts of the world. Amongst the Germans tree-worship, which is "hardly extinct amongst their descendants at the present day" was considered so much sacred that if some one dared peel the bark of a standing tree he had to pay his own skin for it. Among the Celts oak-worship was a common practice. Some among the Lithuanians "maintained holy groves about their villages or houses, where even to break a twig would have been a sin." For the Wanika of Eastern Africa each of the cocoanut trees which feed and nourish them has a spirit and to destroy any one of them is regarded as "equivalent to matricide". Several instances of giving trees into marriage have also been recorded by Frazer who concludes that "The conception of trees and plants as animated beings naturally results in treating them as male and female, who can be married to each other."

Indra-Puja : When there is a drought or insufficient rain the cultivators collectively worship Indra, the King of Heaven, so that he may be pleased to send clouds to rain in their fields. In some parts of the province this is observed as a regular annual festivity. In this festivity one of the tallest trees of the neighbouring forest is cut down and

brought to the meadow beside the village where it is erected and worshipped by the people led by the richest landlord of the locality. Thus the tree seems to be the embodiment of their prayer for rain extended into the sky where the king of rains resides.

Similarly, in many other countries, as Frazer (1971) reports, the tree-spirit is believed to have the power of giving rain and even today in many parts of Europe customs like Indra Puja are found to be practised. For example, in these countries people go out, in spring or early summer or on Midsummer Day, to fell a tree which is brought to the village and set up amidst rejoicings. This is called the May-tree or the May-pole.

The soft sentiments of the farmers that are expressed in such ceremonies may have had some setback in some cases where the farmers have received modern education, yet it is true that the so-called superstitions are rooted in the human blood for they have been being practised for hundreds of years through generations and are based on emotions which are ever stronger than intellect and, as such, they can never be completely annihilated, although their form of expression may be somewhat different under different circumstances.

Before we conclude we feel it necessary to point to the tremendous psychological value of these collective festivals (most of the agricultural festivals are collective) in maintaining and promoting the

mental health of the farmers. They create scope and provide opportunities for the farmers to give vent to their pent up emotions and repressed impulses by indulging, often in excess, in heavy drinking, free mixing between the sexes, and aggressive games like the gladiatorial games in Rome, animal baiting and bull-fights in Spain, the recently abandoned public executions in England, the later denounced Jewish harvest festival of Chag Hasuccoth or the Feast of Tabernacles, the Roman feast of sowing known as Saturnalia or Libertas Decembri (its Christian forms are the Christmas festivities) and a host of others reported in the Encyclopaedia of the Social Sciences (Vol. V, 1953) wherein it has been rightly remarked that these festivities accord sanction on the gratification of "deep seated yearnings", afford occasional release from the bondage of social and moral restrictions and serve as "safety valves" against the dangerous consequences of continuous restraint and repression. In this way the farmers find themselves fresh and energised through their participation in the rites and performances on these festive occasions.

CHAPTER VII

AGRICULTURAL FOLK-LITERATURE AND THE SAYINGS OF KHANA

Literature in the forms of folk-tales, folk-songs, and proverbs that have been orally passed down from one generation to another and later collected and recorded by scholars and researchers offers a rich source of information about the ways in which the people thought and felt in regard to matters that concerned them closely. Agriculture is such a matter having a long past behind it. It is quite natural, therefore, that folk-literature on this subject must have had a luxuriant growth in all the countries under the sun. The agricultural proverbs and sayings, which have their basis in the insight and experience of hundreds of veteran cultivators throughout the ages undoubtedly deserve a careful consideration of the agricultural psychologist.

In this chapter we begin with the sayings of great agricultural import that have been ascribed to Khana, an Indian lady of profound scholarship who belonged to the era of King Vikramaditya

(6th century A. D. or even earlier). A great astrologer, astronomer and a veteran weather specialist as she was, her interest in agriculture, which has been the main source of subsistence of the people of the land, was quite natural. We shall classify these sayings under several heads which will testify to her grasp over the various aspects of agriculture. It is, however, very likely that some of these sayings, which go as Khana's, were added in later times by unknown authors, may be even intentionally to give them the stamp of authority which was enjoyed by this lady. Khana herself also, in every likelihood, might have enriched her own experience by consulting wise agriculturists of her time before she gave her prescriptions in the form of these sayings. As a matter of fact, as is pointed out in the Encyclopaedia Britannica (Vol. 18) and the Encyclopaedia of the Social Sciences (Vols. 9-10), it is "difficult to decide the authorship of a particular proverb" which is rendered more difficult by the fact that "Popular usage sometimes creates new proverbs from old ones." A folk expression "appears to rise straight from a deeply rooted experience" and to be "the product not of a single great individual talent but of successive generations". It is, indeed, interesting to note that even after hundreds of years Khana still enjoys a very esteemed position in the eye of the Indian cultivators who find in her sayings an effective guide-line for their agri-

cultural ventures.

In India there are six seasons, each consisting of two months. They are the summer, the rainy, the autumn, the dewy, the winter, and the spring seasons. The Indian calendar year begins with the summer month of Baisakh, and proceeds through Jaistha, Asarh, Shravan, Bhadra, Aswin, Kartik, Agrahayan, Pous, Magh, and Falgoon to the last month in the year, viz., Chaitra. Baisakh roughly corresponds to the second half of April and the first half of May of the English calendar. Suitability of different seasons for different crops has been repeatedly pointed out in these sayings. Similarly, the astronomical positions of different planets in the year have also been given much importance.

The sayings of Khana (Chattopadhyay) may now be classified as follows :

A. Rainfall

1. There will be a good rainfall and the farmer will reap a rich harvest if it rains during the day and the sky keeps clear and starry at night during the rainy season.
2. There will be a heavy downpour if the rainbow appears in the eastern sky at the time of raining.
3. It will soon rain cats and dogs if stars are visible inside the circle around the moon

(sometimes found during the winter and the rainy seasons).

4. There will be only a scanty rainfall in the month of Shravan if Pous is not so cold, Baisakh rather chilly and Asarh, in its early part, too rainy.
5. The year will undoubtedly get a good shower if Chaitra is cold, Baisakh visited by hailstorms and Jaistha smiles with a clear sky.
6. Rain is impending when the frogs go on croaking without break.
7. The closer the circle to the moon, the nearer is the shower, and vice versa.
8. The rainbow in the western sky indicates no rain, but when it appears in the eastern sky it indicates a shower.
9. Presence of grey clouds heaped up in the sky with the wind intermittently blowing is an index of a near shower.
10. The number of rainy days in Baisakh corresponds to that of foggy days in Pous.
11. Raining that starts on a Saturday continues for a week; starting on a Tuesday it continues for three days; raining on any other day is confined to that day alone.
12. A day in Baisakh will be rainy if the wind blows from the direction opposite to the position of the clouds in the sky.

B. Flood

1. Flood recedes if the wind begins to blow from the south when it rains.
2. Blowing of the south wind everyday from the beginning of Asarh is an index of heavy inundation in the year.

C. Tilling

1. The cultivator will have plenty of crop if he starts tilling his field from its eastern point.
2. Tilling on the full and new moon days is prohibited; for that will bring miseries to the farmer.
3. The land should be tilled sixteen times for cultivation of radish, eight times for cotton, and four times for paddy.

D. Sowing and Plantation

1. The best time for sowing sesame seeds is the period covering the last eight days of Falgoon and the first eight days of Chaitra.
2. The first five days of the month of Asarh offer the best time for sowing paddy seeds, for this will give a rich return.
3. The best time for sowing pulse seeds consists of the last four days of Bhadra and the first four days of Aswin.

4. Seeds of pea should be scattered on the ground excepting in the period spreading over the last nineteen days of Aswin and the first nineteen days of Kartik.
5. A rich crop of maize will be obtained if the seeds are sown in the month of Chaitra.
6. Rapeseeds should be more thinly scattered than mustard seeds.
7. The saplings of cotton should be planted at sufficient intervals so that the gatherer may find enough room between the plants.
8. Saplings of big arum should be planted after the soil is turned with a spade ; seeds of sesame should be scattered after the soil is tilled with a plough ; gourd plants should be grown on heaps of ashes and pepper plants on a clean ground.
9. Falgoon is the best time for growing patol (a garden vegetable).
10. Betel leaves grow luxuriantly if the saplings are planted in the month of Shravan.
11. Bhadra and Aswin are the best time for cultivation of pepper. Kartik and Agrahayan are not so suitable for it.
12. Grafted plants will never wither if they are placed in the soil in a Shravan shower.
12. The size of arum will be small if the root is not planted in Falgoon,

14. Radish seeds should be sown by the end of the autumn season.
15. Plantain trees should be planted in ditches about nine inches deep and at distances of seven cubits. Leaves must not be chopped off. If all this is done it will remove the miseries of the cultivator.
16. In order to have fruits in abundance saplings of mango and also of jack-fruit should be planted at intervals of twenty cubits from one another.
17. Chaitra and Baisakh should be avoided for plantation of brinjal seedlings.
18. Plantain trees should be implanted in the months of Asarh and Shravan. Leaves must not be torn off. This will provide the farmer with food and clothes.
19. If the thick roots of the plantain tree are cut off and transplanted in the month of Falgoon the tree will be bushy and bear plenty of fruits.
20. If a plantain tree is implanted in a ditch one cubit and a quarter deep the tree will bear fruits big in size.
21. Plantain trees implanted in Falgoon become bushy and multiply themselves and produce fruits every month.

22. Ravana, the Rakshasa king of Lanka (a character of the Indian epic "Ramayana") was totally ruined because he had planted plantain trees in the month of Bhadra. Hence some people do not grow them during this month.
23. Transplantation is good for the saplings of cocoanut and betel-nut. Saplings of betel-nut require to be transplanted thrice in order to be strong and fruitful.
24. Cocoanut plants should be so placed that no other tree in the vicinity may touch them. It is necessary to cut off the ripe leaves at the top in order that fruits may grow in plenty.
25. Radish seeds should be sown by the end of Autumn and tobacco seeds by the end of Pous. The plants should have enough space in between them.
26. Cocoanut plants should be placed at intervals of twelve cubits and betel-nut plants at intervals of eight cubits from one another.

E. Manure

1. Water with which fishes are washed and cleansed is good for the gourd creeper. Soil mixed with rotton paddy enlivens the pepper plants.
2. More frequent scattering of ashes under the plants of small arum will make the roots multiply at a quicker pace.

3. The husk and chaff of paddy is a good manure for the growth of bamboos.
4. As manure, cow-dung is good for betel-nut, heap of fresh soil for bamboos, rotten straw for cocoanut, and ashes for big arum.
5. Leaves of custard-apples make a good manure for betel-nut plants.
6. Soil mixed with salt is good for cocoanut trees.
7. In a bamboo grove the dry leaves that fall off in Falgoon should be burnt to ashes. Fresh earth should be accumulated at the bottom of the plants in the month of Chaitra.

F. Soil

1. Aus crop (a variety of paddy) is best grown in sandy soil and jute in soil that is clayey.
2. Small arum grows abundantly in the sandy soil on the river bank.
3. Arum increases in size if grown in shady places, but itches when tasted.
4. The soil for radish should be as soft as cotton and that for sugar cane as fine as dust.
5. The soil for tobacco plants should be powdered to dust.
6. Patol (a garden vegetable) grows richly in sandy soil.

G. Crop

1. Showers in Agrahayan help multiplication of insects damaging to crops ; pouring in Pous damages the dewy crop of paddy, while rain in Falgoun doubles the produce of Chaina and Kaun crops (varieties of paddy).
2. Heavy downpour in Shravan, drought in Bhadra, accumulation of water in the field in Aswin and absence of wind in Kartik will bring about a rich crop.
3. Drought in Jaistha and pouring in Asarh indicate a rich harvest.
4. Showers in Magh hasten the growth of corns and bring happiness to the people.
5. Raining cats and dogs on the ninth day of the light fortnight of Asarh indicates drought for the year. Scanty raining in Asarh is good for fishes to grow, while frequent raining in this month is good for crops.
6. A clear nocturnal sky on the full moon day in Kartik indicates luxuriant growth of winter crops (pulses and cereals) ; presence of clouds and showers at night on this day indicates a miserable yield.
7. If the stalks of the paddy plants are thick but fewer the yield would be plentiful.
8. Jack-fruit trees do not bear much if it does not rain in Agrahayan.

9. Turmeric should be planted in Baisakh and Jaistha and the field should be weeded clear in Shravan and Bhadra. This will fetch a rich return.
10. Paddy plants flourish in the sun and betel plants in shade.
11. There is little hope for a good crop in the year in which the sun-set is clearly visible in the month of Asarh.
12. Raining in early Baisakh is good for Aus plants (a variety of paddy) and pouring in Kartik for plants of cotton.
13. Growing pumpkins on the thatch of his house will remove the miseries of the cultivator.
14. Growing cucumber and gourd in the yard of his house brings happiness to the farmer.

H. Correlations and Combinations

1. A good yield of mangoes indicates a good yield of paddy. A rich crop of tamarind indicates a heavy flood in the year.
2. A cultivator who grows mustard and pulse in the same plot will get two crops at the same time and will thus go merry and care-free.
3. Jute and cotton should not be grown in the same plot of land.
4. Plantain, cocoanut, and betel-nut trees should be grown together in the same plot. Betel-nut trees should be planted when the cocoanut trees have grown up.

5. Leaves of custard-apple trees being a good manure for betel-nut plants, they should be grown in the same plot of land.

I. Harvesting

1. Paddy crop should be reaped after one month of stalking, twenty days of flowering and thirteen days of drooping down of the plants.
2. Paddy crop reaped in Agrahayan knows no waste.
3. Paddy plants reach the maximum of their growth in the month of Agrahayan in the year; betel plants take three Shravans for their full growth.
4. Aus paddy should be reaped after three months from sowing of the seeds.
5. The cultivator who occasionally plucks from his cocoanut trees gets more fruits, while bamboo bushes that are left untouched have a luxuriant growth.

J. Astronomy & Geology

1. Crops will be lean in the year which is ruled it over by Saturn in combination with Mars.
2. Crops will grow in abundance in the year dominated by Mercury in collaboration with Venus.
3. Crops are damaged by drought or downpour if any of the months of the year has five Sundays.

4. There will be a very poor yield in the year in which the thirteenth day of Chaitra happens to be a Saturday.
5. If the first day of Chaitra happens to be a Sunday there will be drought, if it is a Tuesday there will be adequate raining, if it is a Wednesday there will be famine, and if it is a Monday, or Thursday, or Friday there will be plenty of crop in the year.
6. Earthquakes beneath the water in the month of Bhadra are highly ominous, indicative of epidemic and famine of grave consequences.

K. Cattle

1. Miseries ever accompany the farmer whose bulls are too idle or weak to pull the plough.
2. Cattle should be purchased with great care.
3. Tilling on the Full Moon and New Moon days makes the farmer's bullocks sick with gout.

L. Irrigation

1. The ridge around the basin of the field should be well raised and repaired every year. This is a pre-condition of abundant growth of Sali (a variety of paddy).
2. The brinjal garden should be watered whenever the soil is dry.
3. It is the peasant's duty to rush to his field and make preparations for holding the water

of the impending rain in the basin whenever he notices grey clouds gather up in the sky and the wind blowing at intervals.

M. Protection

1. Ashes should be strewn upon the brinjal plants assailed by insects.
2. Palm trees need be protected from cattle for the first twelve years from the day of their germination.

N. Labour

1. Father and sons, or at least brothers, should themselves work in their field.
2. Those who themselves work in their field along with the labourers they hire get the maximum yield, those who do not work themselves but only supervise the hired labour get only half of what they could, had they themselves also worked ; those who do neither lose everything.

O. Location of Land

1. The land for cultivation should lie close to the farmer's house.

Smith and Wilson (1970) have made a valuable collection of English proverbs many of which have clear agricultural implications. We shall now arrange some such proverbs under specific heads

and draw the readers' attention to the striking similarity obtaining between some of them and the corresponding sayings of Khana, listed above.

A. Weather

(a) *Rain and Cloud*

1. If the sun goes pale to bed
 't will rain tomorrow, it is said.
2. If the sun in red should set,
 The next day surely will be wet ;
 If the sun should set in grey,
 The next will be a rainy day.
3. After thunder (wind) comes rain.
4. Rain from the east,
 Wet two days at least.
5. Small rain lays great wind.
6. The rain comes scouth,
 When the wind's in the south.
7. Rain before seven,
 Fine before eleven.
8. Red clouds in the east, rain the next day.
9. If the red sun begins his race,
 Expect that rain will flow apace.
10. If the moon shows a silver shield,
 Be not afraid to reap your field ;
 But if she rises haloed round,
 Soon we we'll tread on deluged ground.
11. The farther the sight, the nearer the rain.
12. February, fill the dyke.

13. If the first of July it be rainy weather,
It will rain more or less for four weeks
together.
14. After black clouds, clear weather.
15. When the clouds are upon the hills,
They'll come down by the mills.
16. Cloudy mornings turn to clear afternoons
(evenings).
17. When the wind is in the south,
It's in the rain's mouth.
18. If the wind is north-east,
Three days without rain,
Eight days will pass
Before south wind again.
19. All the months in the year
Curse a fair Februeer (When it does not
rain in February there's neither good Grass
nor good Rye).
20. In the 'old of the moon,
A cloudy morning bodes a fair afternoon.
21. Rain, rain, go to Spain.

(b) *Wind*

1. A fair day in winter is the mother of a storm.
2. When the wind is in the east on Candlemas Day
There it will stick till the second of May.
3. When the wind is in the west,
The weather is at the best,

4. Where the wind is on Martinmas Eve,
There it will be the rest of winter.
5. A windy March and a rainy April make a
beautiful May.
6. No tempest, good July,
Lest corn look ruefully.
7. A northern wind brings weather fair.
8. The north wind does blow,
And we shall have snow.
9. Every wind blows not down the corn.
10. When the wind is in the east,
It is neither good for man nor beast.
11. To pluck the grass to know where the wind
sits.

(c) *Frost and Mist*

1. Farewell frost, fair weather next.
2. When the mist comes from the hill,
The good weather it doth spill ;
When the mist comes from the sea,
The good weather it will be.
3. So many frosts in March, so many in May.
4. A white frost never lasts more than three days.

(d) *Thunder*

1. Winter thunder,
Summer hunger.
2. When it thunders in March, it brings sorrow.

(e) Temperature

1. A cold April
The barn will fill.
2. Expect not fair weather on one night's ice.

B. Sowing and Harvesting

1. On flat land grow foulest weeds.
2. On the first of November if the weather holds clear,
An end of wheat-sowing do make for this year.
3. Early sow, early mow.
4. To sow dry and set wet :
This rule in gardening never forget.
5. Sow four beans in a row,
One for cowscot (ringdove) and one for crow,
One to rot, and one to grow.
6. Sow peas and beans in the wane of the moon ;
Who soweth them sooner, he soweth too soon.
7. Sow thin and mow (shear) thin.
8. He that sows good seed shall reap good corn.
9. He that sows in the highway tries his oxen and
loses his corn.
10. Short harvests make short adlings (earnings).
11. Dry August and warm,
Does harvest no harm.
12. A rainbow at morn
Put your hook in the corn,
A rainbow at eve
Put your head in the sheave.

C. Crop

1. Fruit ripens not well in the shade.
2. It is time to cock your hay and corn,
When the old donkey blows his horn.
3. Under water famine, under snow bread.
4. Fools grow without watering.
5. May never goes out without a wheat-ear.
6. A plum year, a dumb (glum) year.
7. A cherry year's a merry year.
8. A sloe year's a woe year.
9. A haw year's a brow year.
10. An apple year's a drappin' year.

D. Plantation

1. A often transplanted tree bears not much fruit.
2. The tree roots more fast,
Which has stood a rough blast.
3. He who plants a tree plants for prosperity.
4. Remove an old tree and it will wither to death.
5. No root, no fruit.
6. If you would fruit have,
You must bring the leaf to grave.
(You must transplant your trees just about the
fall of the leaf.)

E. Labour

1. God, speed (prosper) the plough.
2. One acre of performance is worth twenty of
the land of promise.

3. Plough deep, while sluggards sleep ;
And you shall have corn to sell and to keep.
4. The plough goes not well if the ploughman
hold it not.
5. He that by the plough would thrive,
Himself must either hold or drive.
6. A man must plough with such oxen as he has.
7. He who greases his wheels helps his oxen.
8. He that lippens to lent ploughs, his land will
lie ley.
9. Look to the cow, and the sow,
And the wheat mow,
And all will be anow.
10. Mastery mows the meadows down.
11. He is drinking at the harrow when he should
be following the plough.
12. He that will have his farm full
Must keep an old cock and a young bull.
13. Corn him well, he'll work the better.
14. As they sow, so let them reap.
15. Marry in May, repent alway.
16. He is a fool that marries his wife at Yule, for
when the corn's to shear the bairn's to bear.

F. Cattle

1. Corn and horn go together (when corn is
cheap cattle are not dear, and vice versa.)
2. A curst cow has short horns.
3. An old ox makes a straight furrow.

4. when the cuckoo comes to the bare thorn,
 Sell your cow, and buy you corn ;
 But when she comes to the full bit,
 Sell your corn and buy you sheep.

G. Protection

1. Two sparrows on one ear of corn make an ill agreement.

Each of the above sayings and proverbs is obviously a storehouse of wisdom the cultivators have acquired through their age-old experience based on careful and detailed observation of the factors connected with agriculture. The cultivators' anxiety for a good crop has found its expression in the sayings like 'February, fill the dyke', 'Rain, rain, go to Spain' (Cf. Bengali proverb: 'Rain, away you keep, Karamcha [an acid fruit] on lemon leaf'), 'Farewell frost, fair weather next', 'God, speed the plough', and 'No tempest, good July, lest corn look rueful'.

Most of these agricultural proverbs and sayings relate to weather conditions. This is quite natural because success in agriculture largely depends on the mercy of the weather, particularly in countries where the weather is extremely whimsical. It is true that application of science in agriculture has resulted in improvement in flood control and irrigation systems in some

countries thus lessening the farmers' dependence on the vagaries of weather to an extent, yet the importance of weather in agriculture can perhaps be never ignored altogether. Hence, the practical value of these sayings to the modern cultivator cannot be outright denied, although they are quite old in origin. They indicate when to expect a good shower and when to apprehend a bad drought or a heavy downpour and thus warn and advise the cultivator to take adequate steps well in advance. It is interesting to note the influence of the geographical position of a country on her weather proverbs. In India the east and the south winds are welcomed, but in England praise goes for the wind that blows from the north. 'Under water famine, under snow bread' and 'The farther the sight, the nearer the rain' are two more examples. Suitability of different weather conditions for different crops at particular stages of their growth has quite logically occupied a significant place in these sayings. Those on sowing and plantation, and crop and harvesting suggest a lot of practical measures to be adopted by the cultivator desirous of reaping a rich harvest.

The sayings on labour deserve a special consideration. Everywhere self-help, self-dependence, self-sufficiency, self-application and strict supervision of hired labour have been repeatedly emphasised. This is psychologically quite sound because other men engaged by a cultivator to

work in his field can never be as sincere as the cultivator himself, as their interest in the land will be naturally far less than that of their employer who owns the plot and enjoys the crop. So, the cultivator must also work himself along with his relatives conjointly with the labourers he hires. This will refrain the hired workers from idling away the time and also enthuse them in their work. Participation of the employer in the work will heighten the sense of prestige of the employees and the example he sets will create a healthy spirit of competition amongst them. These sayings also perhaps indicate practical difficulties in procuring hired labour at the time of their origin. Sayings like 'Corn him well, he'll work the better' hold out the importance of monetary and food incentives in the motivation of workers. This particular proverb perhaps also indicates greater interest of the worker in a share of the crop he grows in his master's plot as his remuneration than in a monetary return—a point which we have discussed in details in a subsequent chapter. The advice that a farmer should procure lands in the vicinity of his house is also fully justified, because this will enable him to supervise the hired labour more effectively and to keep a constant watch on the crop in the field in order to protect it from thieves and harmful creatures. The sayings on corn protection express the cultivator's great concern for healthy growth and preservation of the plants till the harvest time.

Proverbs like 'Marry in May, repent alway' reflect the idea that if a cultivator marries in Spring which is the planting time he will surely keep busy with his wife and neglect his work for which nothing but loss and repentance will be his due. Bengali proverbs like 'For some, it's Pous gay (harvest-time); for others, the Doom's Day', and 'The master is gone, lay thy plough down' reflect happiness of the land owner when he brings his harvest home but miseries of the poor share-cropper or day labourer who has to pay his debt as soon as he gets his little share of the crop; and negative attitude of the ill-paid and unsatisfied worker towards his unkind employer. The sayings about cattle indicate the need for proper selection and care of these animals which play a vital role in cultivation. They are still very important, particularly in the underdeveloped countries. Their importance was paramount till tractors and such other tools were devised and introduced in agriculture.

The question of land fertility is a natural headache for the farmers. When chemical fertilizers were not invented they had to think of natural manures. The sayings of Khana on this issue imply keen observation and simple experiments with various combinations done by the Indian cultivators.

The psychological soundness of some of these sayings is indeed commendable. For instance, the advice that the peasant should start ploughing

his land from its eastern point is quite consistent with the law that the beginning of a work should be pleasant. By beginning to till the plot from its eastern point in the morning—when the work of the day usually commences—the peasant will keep the sun (in this tropical country) on his back and thus the start will be pleasant. 'Well begun is half done', 'Good beginning makes a good ending'—such proverbs testify to the importance of a pleasurable start.

However, folk sayings of the above kind cannot always claim cent per cent certitude; yet, undoubtedly, they are the records of the beginning of scientific enquiry of man into the phenomena of agriculture. Observation, verification, and generalisation which are the basic methods of science, are obviously the foundation of these dictums, too. The validity of such sayings is, however, likely to be affected by subsequent changes in climatic conditions, modernised education of the cultivators, and introduction of new technology in agriculture of the countries concerned.

Agricultural folk-literature also includes the songs and verses which the farmers, almost everywhere, chant at the time of sowing and reaping in their fields. There is no doubt that analysis of these musical expressions will reveal not only the poetic excellence and richness of imagination, so spontaneous amongst the farmers, but also uncover

a lot of their social problems and a host of their likes and wishes which find a natural expression in these poetic products. Collective singing has also a stimulating effect on the workers' efficiency, while it also binds them together with a great sense of oneness and solidarity. In many cases the songs are of a sexual tone, and we all know, a tremendous source of energy lies in sexual thoughts as is noted in the sex songs and utterances of manual labourers almost exhausted in doing a hard piece of work and groping for additional energy.

Songs are sung by the farmers also when rains are scanty or late in arrival. As Frazer (1971) says, the Greeks of Thessaly and Macedonia send out, in the event of a long drought, their children to all the neighbouring springs and wells to invoke the rain-god by singing. The girl at the head of the procession is adorned with flowers and at every halting place she is drenched in water by her companions. The children go round the water places singing verses, such as :

"O my God, upon the plain
Send thou us a still, small rain,
That the fields may fruitful be,
And vines in blossom we may see,
That the grain be full and sound,
And wealthy grow the folks around."

The Serbians, in time of drought, strip a girl and dress her, from head to foot, with grass, herbs

and flowers. She is given the name Dodola. Dodola and other girls go from house to house singing songs. At every house the housewife wets Dodola with a pail of water. One of their songs is :

“We go through the village ;
The clouds go in the sky ;
We go faster,
Faster go the clouds ;
They have overtaken us,
And wetted the corn and the vine.”

In both these cases the girl, occupying the key position, is covered with shrubs and flowers and drenched in water by the farmers who want the rain-god to drench and vegetate their fields in the same way. Thus, it appears, the girl symbolises the field. The field that produces is naturally conceived of as a female. So, a girl is selected to represent the field. It is obviously believed by the farmers that like human beings the rain-god must also be imitative and will do the same as he sees the farmers do. Children are selected perhaps because their prayer will be more readily granted in view of the simplicity and purity of their hearts.

In order to have rain the farmers of the Central Province of India tie a frog onto a rod covered with branches and leaves of the *neem* tree and go round every house in the village singing :

“Send soon, O frog, the jewel of water !
And ripen the wheat and millet in the field.”

It may be noted here that in India frogs are abundantly seen during the rainy season and their croaking in chorus is believed to be invariably followed by a shower.

A comparative study of the agricultural folk-literatures of different countries of the world will yield interesting information about the course of development of agriculture in different geographical and cultural environments as also about the variety in the thoughts, feelings and habits of the people engaged in cultivational work. Agricultural folk-sayings and songs of different countries will also reveal how people of similar concern, though separated from one another by natural barriers, have thought and felt alike about things connected with the means of their subsistence.

CHAPTER VIII

AGRICULTURAL INTEREST AND APTITUDE—AND THEIR MEASUREMENT

Countries that are serious about their progress in agriculture cannot ignore the need for ascertaining whether or not the people who are already engaged in agricultural work and also those who intend to enter this occupation and undergo agricultural training or education adequately possess the requisite interest and aptitude which contribute to satisfaction and success in work in a great measure.

It is, of course, true that the relation between interest and achievement is a controversial issue. Strong (1947), for example, holds that interest in an area is an index of satisfaction, and not necessarily of success, in related activities. He argues that a person who has interests similar to that of his colleagues enjoys the work and pulls on well with his group, although his achievements may not be so high. Freeman (1959) also attaches greater importance to interests than to aptitudes and abilities in the selection of occupations or courses of study. He believes that the aptitudes and abilities of an individual are

ordinarily not enough specific to justify guidance solely in their terms and recommends motivation, determined by the person's interests, values and preferences, to be rather the "deciding factor" in such matters. However, the arguments of Meyer and Penfold (1961) over this puzzling question seem to be more convincing and realistic. They say that interest may not be accompanied by as much attainment at the initial stage, but it is likely to cause sustained effort which brings forth success in increasing degrees. Ability produces success; success begets interest; interest leads to continued effort and this, combined with ability, results in greater success. Thus ability and interest seem to supplement and strengthen each other. Bingham (1942) has very nicely elucidated the relation between interests and abilities. According to him, "More often than not, a person can learn to do best what interests him most, and, conversely, is likely to develop an interest in doing what he finds that he can do best."

The question as to whether interests are innate or acquired has also been a point of psychological investigation. Carter (1932) who noted highest resemblance in interests among identical twins, considerable positive correlation among fraternal twins, and remarkable resemblance among the members of the family thus held heredity more responsible than environment in determin-

ing the interests of a person. Strong, on the other hand, holds the opinion that all interests are learned "since they involve reactions to specific things". Of course, he thinks, there are some exceptions, such as like for sugar and dislike for quinine, which though not inherited, closely appear to be native.

The view that most of the interests being reactions to specific objects are acquired seems to be quite acceptable. Exposure to similar opportunities in the family for developing similar interests is undoubtedly a strong factor underlying close family resemblance in this respect. However, ability also appears to be a powerful determiner of interests. Evans (1965) points out that "... a lack of success may well cause individuals to desist from following interests which they may find to hand in their environment and may induce them to turn their attention to alternative occupations".

Thus for purposes of selection and guidance both interests and abilities of the person concerned should be taken into due consideration. Aptitude which connotes potential ability will naturally come up for consideration of the psychologist particularly in imparting vocational guidance and advising selection of study courses. Aptitude, in fact, forms the basis not only of ability but also of interest. As Bingham puts it, "Aptitude ... is a condition indicative of a person's

power to acquire specific behavioural patterns of interest, knowledge and skill." A person having aptitude of a certain kind is likely to acquire these things in the related area provided he gets adequate training and experience. Aptitude thus seems to depend largely on favourable environmental factors for its proper fruition and maturity.

Progress in agriculture will naturally be determined by the extent to which persons engaged, or to be engaged, in this occupation have interest in and aptitude for the related activities. There is, therefore, a great need for devising tests, methods, and techniques for measurement of interest and aptitude in this field. This will help the agricultural planners and employers to pick up the right persons for appointment and education.

Measurement of Agricultural Interest

The areas suggested by Cattell and his fellow-writers (1950) may be explored for the appraisal of agricultural interest, at least in some cases, through interviews, questionnaires and simple experiments. Answers to queries such as (1) how the person spends his personal money, (2) how he spends his time and what he spends it for, (3) which of the alternative courses of action, presented to him in an opinionnaire, he prefers to satisfy, (4) what items in a situation (library, museum, exhibition, newspaper, etc.) draw his attention more

readily, (5) how much time he spontaneously spends in attending to an item, (6) what kind of materials he can immediately recollect more correctly after presentation, (7) what kind of materials he can recall more correctly after considerable intervals of time, (8) what kind of materials holds his attention longer in a disturbing environment, (9) in what area he keeps a higher level of information, (10) in which area he takes decisions more quickly, (11) in what activities he shows greater skill, (12) with what sort of materials he shows greater fluency of writing and higher speed of reading, (13) in what field of activity he evinces greater persistence and produces more, etc.—will indicate his interests. If the answer in most cases is "agriculture" or "agricultural" it may be fairly inferred that he has considerable interest in this field.

Inventories like Strong's Vocational Interest Blank and Brainards' Occupational Preference Inventory (Form A) will also be helpful in the measurement of agricultural interest.

In the Vocational Interest Blank for Men, for example, Strong has given a large number of items on (a) occupations, (b) school subjects, (c) activities, and (d) peculiarities of people. The person being tested is required to indicate whether he likes, or dislikes, or feels indifferent about each of these items. In respect of some other items in the blank the testee is to indicate his order

of preference for a number of given activities. Certain other items on occupations, activities and personal peculiarities are given in pairs and he is asked to indicate his choice in each of these combinations. In regard to the last part of the blank he is to point out whether each of the characteristics given in this part applies, or doesn't apply, or he is not sure whether it applies or not to himself. Strong claims that his instrument dependably discerns groups of persons belonging to different occupations, although some amount of overlapping is quite natural among occupations of kindred nature. He applied his inventory also on two criterion groups of farmers, one for developing the scale ($N=245$) and the other for determining norms ($N=241$)—all the members of the groups having been engaged in farming for at least three previous years, while most of them were graduates in agriculture. Besides the specific interest pattern of farmers as revealed by this inventory, some of the items such as (i) occupations like farmer, florist and tool maker, (ii) subjects like botany, economics, geography, geology, manual training, nature study, and zoology, (iii) amusements like fishing, hunting, observing birds, chopping wood, picnics, animal zoos, museums, pet monkeys, snakes, and "National Geographic Magazine", and (iv) activities like operating machinery, handling horses, raising flowers and vegetables, decorating a room with flowers, methodical work, outside work,

physical activity, gardening, etc. seem to have an obvious bearing on agricultural interest.

The Brainard Occupational Preference Inventory—Form A, developed by P.P. and R.T. Brainard, consists of 140 items equally divided among seven occupational fields, one being Agriculture. The twenty items in the field of agriculture belong to four sub-groups, viz. (A) Agriculture, (B) Small Animal Business, (C) Forestry and Horticulture, and (D) Animal Husbandry and Dairying, each having five items. The testee is to indicate his feeling about each item on a five-point scale running from -2 , through 0 , to $+2$, according as he dislikes it very much, dislikes it somewhat, keeps neutral or knows too little about it, likes it somewhat, or likes it very much, by encircling the corresponding number on the scale. Sum of the encircled numbers gives his total score in the field. The authors of this inventory furnished preliminary norms indicating very high, average, low, and very low interest in each field. The items in the field of agriculture are: A—(i) Make a vegetable garden, cultivate, spray, weed, and water it? (ii) Pick, clean, sort, and pack fruit or vegetable? (iii) Plough ground on a large farm, plant and harvest crops? (iv) Grow berries, grapes, or other small fruits, cutting out dead branches, training them on support, etc.? (v) Work on a farm some distance from a town? B—(i) Raise chickens, turkeys, ducks, rabbits, or squabs for market? (ii) Raise

fish or frogs in ponds or streams to sell ? Raise fur-bearing animals, or trap them and sell the fur pelts ? (iv) Catch and sell fish, using nets or boats, on lakes or the ocean ? (v) Raise pedigreed dogs or cats ; keeping records, preparing proper food, curing diseases, training them, and keeping them clean and well-groomed ? C—(i) Cut down trees and saw them into cord-wood or rough lumber ? (ii) Use pruning shears and saw to shape trees, vines, and hedges ? (iii) Dig ditches for irrigation, repair fences, clean out storage sheds, and do other physical work to keep a place in good condition ? (iv) Plant trees, study tree growth, spray and care for them ? (v) Clear away brush and burn it, pull stumps and keep land clear ? D— (i) Feed, water, and take care of cows, horses, or pigs ; keep stalls or pens clean, and animals in good condition ? (ii) Judge cattle, horses, or other animals to select the best breeding stock ? (iii) Herd cattle or sheep on range or pasture land to fatten them for market ? (iv) Milk cows ; strain, separate and care for milk ; churn butter ; make cheese, etc. ? (v) Measure and mix feed for cows ; carry in the right amount of hay, seed cakes, silage and ground feed ?

The present writer (1973) administered this inventory on a group of 30 male higher secondary school teachers of West Bengal, worked out norms and compared these with that worked out by the Brainards on a sample of 95 Americans. On the whole, the Bengalees showed a much higher level of

interest in agriculture than the Americans possibly because of the recent agricultural developments in India, which is chiefly an agrarian country. Differences in the composition of the two groups, the American group consisting of people-in-general and the Bengalee group consisting of teachers only—as well as in their standards of self-assessment may, however, be also responsible for this wide discrepancy. Although the Bengalees showed overall higher interest in agriculture, compared with the Americans, they showed very little interest in small animal business, presumably due to their lesser familiarity with the related activities. 81% of the Bengalee teachers disliked raising fur-bearing animals or trapping them and selling the fur pelts obviously because such animals are not abundantly found in the plains of West Bengal to which they belonged. C-(iv), C-(iii), C-(i) & C-(v), and D-(i) were the most liked items, the percentages of the subjects preferring them being 97, 93, 90, and 81, respectively. The items of the Brainard Inventory appear to be quite interesting and fairly comprehensive. These tools, with necessary modifications according to local needs, may, therefore, be used for exploration of agricultural interest in different countries.

As Cattell (1950) remarks, knowledge or information is an objective index of interest. The underlying theory is that a person interested in a field is likely to have gathered independently

of any technical training or education, much more information about the subject than one who is less or not interested in it. He will also know more about the subject in which his interest is greater. Suitable information tests may, therefore, be developed for measurement of agricultural interest. The items in such tests will naturally relate to different areas of agriculture and, as Bingham points out, "Only items which could have been learned by almost anyone in the course of his daily activities and general reading" should be included in them. Technical items known only to specialists must be avoided. But, as the present writer (1971) points out, information tests of this kind, however objective and useful they may be, will surely have some natural limitations. For instance, the items in such a test can never be exhaustive. They cannot cover all possible fields within a given time-limit necessary for test administration. Also the questions the test-maker sets in a specific area in his test cannot be treated as truly representative of all possible questions in that particular area. Information tests of this kind, thus, generally fail to do justice to individual testees with different backgrounds as it is extremely difficult to find out enough items which will be equally applicable to all persons with varying educational, social, economic, and cultural levels and belonging to rural, urban, and industrial areas. Thus, inability of a person to answer certain items in the test cannot be

accepted, under all circumstances, as indicative of his lack of interest in the corresponding area. It may be that although he fails to answer these questions he could very well succeed with other questions in the related area had they been offered by the test.

The present writer (1971) devised a new method for exploration of interest through information which will be largely free from the above limitations and will, at the same time, ensure spontaneous expression of genuine interests of the individual. This is the Self-Framed Question-Answer Method Of Interest Exploration, in brief— The Q-A Method.

Following are the requirements of this method :

- (a) An interest-area is specified ;
- (b) A time-limit is prescribed ;
- (c) The subject (the person on whom the method is employed) has to frame as many questions on the specified area as possible ;
- (d) He has also to answer his own questions simultaneously ;
- (e) Framing and answering of questions must be done within the prescribed time-limit ;
- (f) The questions have to be short so that their number may be larger ;
- (g) They must be varied, i.e. they must deal with as many aspects of the interest-area as possible so that superficial and one-sided questions may be avoided ;
- (h) The questions should be such that they aim at eliciting only some *objective* information (not subjective opinions or attitudes) about definite aspects of the interest-area ;
- (i) The subject

is asked to frame only those questions the answers of which are definitely known to him; (j) He is warned that his questions and answers will be examined by experts and that not only his wrong questions and answers will be ignored but also he will be penalised for them by deduction of marks from his total score.

The total number of correctly answered self-framed questions will constitute the subject's score in the specific interest area. A comparison of his scores in different areas will indicate the relative strengths of his interest in the areas concerned. Comparison of scores obtained by different subjects in the same area will signify their respective positions on the scale.

This method makes no imposition on the subject by requiring him to answer a number of given questions. On the other hand, it provides him with enough scope for free and spontaneous self-expression. It aims not at ascertaining what the subject does not know but at determining what he actually knows. It frees him from the fear-complex that he may not do as well as others on a set of given questions that characterises the usual test situations. Moreover, it gives him the courage and confidence to go ahead with the task with freedom according to his own choice. The checks, viz. the prescribed time-limit and the expressed warning that his questions and answers will be strictly examined and marked, may be reasonably expected

to arouse only his sound and genuine interests and to curb his tendency to guess or fake. The method is also free from defects caused by vocabulary problems and cultural peculiarities which make most of the tests of the conventional types largely limited in their application.

The method was validated (Das, 1971, 1972) against bio-data and expert ratings ($N=28$) in ten interest areas, and also against the Brainard Occupational Preference Inventory—Form A ($N=30$). The ten interest areas, as could be indentified on the basis of questions freely framed by the subjects within a given time-limit, were: socio-physical, cognitive, artistic, practical, religious, economic, social, explorative, literary, and political. Bio-data pertinent to each area were collected in respect of every subject from college records, interviews and written replies to a questionnaire. Difference between those who framed questions and those who did not frame questions in an interest area was calculated in respect of each bio-datum relating to the field and its validity index was worked out. The validity indices ranged from .01 to .76 and the percentages of the bio-data, which were found to be more characteristic of the Interest Group, turned out to be 54.5, 55.5, 100, 100, 100, 87.5, 83.3, 50, 83.3, and 91.6 in the above ten areas, respectively. The agreement between the Method scores and expert ratings (conjoint ratings of the subjects by two hostel supervisors) in respect of strong inter-

ests was also quite high. Percentages of cases identified by both the method and the raters as having strong interest were 57.1, 100, 87.5, 66.6, 66.6, 100, 55.5, 75, 87.5 and 80 in the ten areas, respectively.

Ranks of the subjects ($N=30$) as ascertained by the Method were compared to those determined by the Brainard Inventory in the areas of commerce, agriculture, science, and aesthetics. There was no difference in 6 cases in commerce, 6 cases in agriculture, 8 cases in science, and 6 cases in aesthetics. There was difference to the extent of 0.5 in 2 cases in commerce, 2 cases in agriculture, 5 cases in science, and 6 cases in aesthetics. A difference to the extent of 1 was found in 10 cases in commerce, 6 cases in agriculture, 9 cases in science, and 11 cases in aesthetics. Thus in most of the cases, i.e. in 60% 46.6%, 73.3%, and 76.6% of the cases in the areas of commerce, agriculture, science, and aesthetics, respectively, the rank difference on the two measures ranged between 0 and 1. Considering the intrinsic differences between the Method and the Inventory along with the fact that the correspondence between whatever two measures of any psychological phenomenon can never be perfect, this little difference between the Method and the Inventory can be accepted as quite natural and permissible. The contingency coefficients of correlation between these two measures turned out to be .54 .53, .47, and .41, respectively, in the above four fields, each with a standard error of .18. The

correspondence on rank positions was lower in agriculture than in science, commerce or aesthetics obviously because the group consisted of science, commerce, and arts graduates but did not include any graduate in agriculture.

The reliability of the method was found to be .44 and .67, respectively, in the two areas of games & sports, and literature with corresponding reliability indices of .67 and .77 when the two administrations had an interval of 40 days between them. Both the reliability coefficients ($N=54$) were however, significant well above the .01 level of confidence.

From the above findings it may perhaps be reasonably expected that this Method will also prove useful in exploring agricultural interest, like interest in any other field, after determination of norms on its application to appropriate criterion groups.

Measurement of Agricultural Aptitude

No mentionable Agricultural Aptitude Test seems to have been developed yet. So, there is a vast scope of psychometric research in this area. An aptitude of a person being a present "condition or set of characteristics" indicative of his future potentialities in a specific area, it is reasonable to think that it would include characteristics not only inborn but also acquired. As Bingham says, "No matter what his constitution may at first have been, it has unfolded, taken shape, been encouraged here and thwar-

ted there, during the impact of favourable or unfavourable stimulation from the environments in which he has developed. And so, when appraising his aptitude we must take him as he is — not as he might have been."

Information, which is regarded by many as indicative of interest, is regarded as indicative of ability by others (Strong, 1948). According to Evans (1965), a test of information is likely "to measure intelligence as interest." Aptitude, as has been stated above, being the basis of knowledge, interest, and ability, may, therefore, it seems, be considerably measured also through carefully designed information tests. The level of information called for should be consistent with the purpose of testing and the background and educational standard of the target population. The items in an agricultural information test should be of the objective type and they should cover the major areas of agriculture. Below are given some examples.

True-False Type :

Indicate whether the statements are true or false by underlining T or F as the case may be :

1. Potatos grow well in sandy soil. T F
2. The climate of the Mediterranean
Region is conducive to cultivation of
fruits. F T
3. Bangladesh is at the top of the jute-
producing countries of the world. T F

4. Frost is damaging to mango flowers....T F
 5. Japan is a surplus producing country..T F

Matching Type :

Match the items in the two columns given below inserting the serial number of that item on the right hand side within the bracket against an item on the left which agrees with the former :

- | | | |
|-----------------------|-----|-----------------|
| (a) Leghorn | () | 1. Organisation |
| (b) Pumpkin | () | 2. Fertilizer |
| (c) D.D.T. | () | 3. Fruit |
| (d) F.A.O. | () | 4. Insecticide |
| (e) Ammonium Sulphate | () | 5. Fowl |

Completion Type :

Fill in the gaps appropriately :

1. Quinine is obtained from the....of cinchona trees.
2. Cheese is a product.
3. Tractor is used for....the land.
4. Radish grows....the soil.
5. The food for a tree is prepared by its.....

Classification Type :

Underline the word which does not fit in with the others.

1. Saw, Spade, Shovel, Tractor
2. Paddy, Jute, Tea, Maize
3. Brinjal, Pepper, Tomato, Potato
4. Dog, Buffalo, Ox, Horse
5. Sparrow, Earthworm, Locust, Rabbit

Agricultural information tests consisting of items of the above and such other kinds should be carefully constructed and standardised according to the accepted principles of test construction.

Suitable tests may also be used for measuring such special abilities as together constitute a large part of the agricultural aptitude. Finger dexterity ; mechanical ability ; general agility ; acuity of vision, audition, and olfaction are some examples. Temperamental tests for measuring persistence, capacity of endurance, love of solitude, etc. will also be helpful.

Relevant bio-data of the person to be tested should also be collected, for they are a good indicator of the possibility of his having, or not, an aptitude for agriculture. For instance, if he hails from a rural area, belongs to a farmer's family having a considerable area of land and a good stock of cattle, possesses some amount of direct experience of working in the field and supervising hired labour, and is fond of hearing, reading, writing, and discussing topics related to cultivation, it is more likely than not that he should have acquired something of the agricultural aptitude—some interests, skills and knowledge—which makes for success in this occupation.

Special care has to be taken in testing the aptitude and interest of the illiterate and semi-literate farmers and agricultural labourers. Those with greater aptitude for and stronger interest in agri-

culture among these people will have to be identified for success of training programmes and popularisation of the new technology in agriculture. Conventional types of written tests and non-verbal tests involving the use of fine geometrical designs and diagrams will not, naturally, work in their case for obvious reasons. Hence other kinds of tools and techniques will have to be employed and, if possible, new procedures should be evolved, for exploration of their mental capabilities and propensities.

Individual testing will be naturally more suitable than group testing for these people. Tests having pictorial items will be more effective. Pictures of various agricultural tools, insects, birds, animals, plants, crops, etc. may be presented for identification, classification, matching, completion, and such other responses to be given orally.

The open interview will, it seems, work better with such people than the closed and strictly standardised one requiring the use of a limited number of fixed questions to be put uniformly to all the interviewees. This will provide for free and spontaneous self-expression of the subject and offer important clues which may be profitably probed and pursued by the interviewer. In fact, this method was found to be quite useful by the present writer when the rapport was high and the approach quite congenial and sympathetic with minimum restriction on time and freedom of the subject in speaking

out his mind.

Extempore talks on given topics, verbal elaboration of given themes and situations, comments on given problems, narration of problems faced with and of the manner in which they were solved, conversation and group discussion—all relating to agriculture—and such other procedures are also likely to reveal a great deal of the aptitude and interest of the illiterate and semi-literate people in agriculture.

Performance tests involving manipulation of agricultural tools—handling, devising, repairing, assembling, disassembling, etc.; identification of seeds, fertilizers, pesticides, and insects and description of their properties and effects, and the like will also, it is expected, prove quite useful.

Observation of a farmer at work which may last over a long period, if necessary, will reveal the degree of his persistence and sincerity of purpose indicating the depth of his zeal and interest in agriculture and examination of the standard of his output—the upkeep of his garden, the quality and quantity of the crop he has grown in his field, the health of the cattle he keeps, the condition of the tools he possesses, and so on will throw enough light on his aptitude for agriculture. Analysis of his case-history and daily routine of his activities will similarly yield significant information in respect of his interest and aptitude in this area.

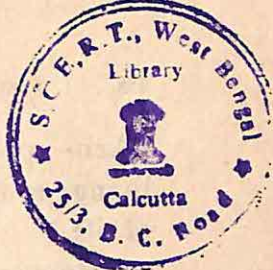
A person who has active interest in his work will naturally think much about it. He will observe

details, feel curious to learn more about them, and identify obstacles and problems and try to think out their solutions. Thus he will have a lot of queries in his mind concerning his occupation. So, instead of putting questions to him, as is the usual practice, he may be encouraged to speak out the questions that have occurred to him from time to time. Of course, the questions have to be pertinent to the specific tasks he is required to perform and things he has to handle. The larger the number of questions the greater, it may be expected, will be his interest. An analysis of these questions will also indicate his insight into the matters relating to his job.

It seems to be high time that psychologists should think of the need for allowing greater freedom and scope to the testee to unfold himself spontaneously and in his unique fashion than is provided for in a traditional test situation where all are required to answer the same questions or perform the same tasks in an identical situation within a fixed time limit. The traditional procedure may be more convenient from the statistical point of view, but we must remember that psychology is primarily concerned with the individual's strengths and weaknesses which cannot uncover themselves fully under strictly rigid conditions. Psychology must use statistics, but to the extent just needed and never at the cost of the individual who is at the centre of all our training and guidance

programmes.

Much, therefore, remains to be done in this field which is so vitally connected with the very question of survival of the human race.



CHAPTER I X

MOTIVATION IN AGRICULTURE

There are today a billion-and-a-half hungry people—some simply having not enough to eat and some suffering from deficiency in protein, minerals and vitamins in their diet—in the developing countries, as revealed by the Third World Food Survey of the United Nations Food and Agriculture Organisation (FAO) and, according to an estimate made by Dr Richard L. Hall, chairman of the executive board for the Third International Congress of Food Science and Technology, 10,000 people in the world die every day of malnutrition (Harrar, 1971).

The above findings hold out a grim picture of the world's food position which is likely to worsen further if the rate of population growth, which is alarmingly high in many countries, is not brought under proper control. It is, therefore, reasonable to maintain that adequate measures both for controlling population explosion and for bringing about green revolution should be simultaneously

taken up for providing mankind with sufficient living space and food, besides other amenities of life.

Hoopes (April 1968) has rightly remarked that "the beneficial effect of family-planning programmes now being adopted around the world is decades away, at best. By then, millions could have known a lifetime of hunger. There is no choice but to increase the world food supply—immediately." In view of the gravity of the problem Waters (Oct. 1967) has given a timely call to launch a "War on Hunger"—"a war that must be won!"

Proper motivation of the agricultural personnel is obviously one of the major conditions for progress in agriculture. Necessary steps should, therefore, be taken to motivate these people.

In the present chapter we shall first discuss the concept of motivation, in brief, and then mention some of the measures that are likely to enthuse these persons in their work.

According to the psychologists, no work is uncaused. There is always something that "moves" a person to behave in the particular fashion that he does in a given situation. And that is his "motive" at the moment. There must be different motives for different kinds of behaviour under differing situations. Not only that; more often than not a number of motives combine and work together to produce a single complex behaviour. Separate motives or separate complexes of motives may also

work behind the apparently same kind of behaviour committed by persons with dissimilar backgrounds and experiences.

The nature of motives can be best understood if we consider the theories of motivation. As maintained by Curtis (1960), the motivation theories may be classified under three broad categories. First, there are the theories, such as those of McDougall and Freud, which characterise the motives as forces within the individual that "push" or goad him to behave in a particular manner under a given set of circumstances. Instincts, impulses, drives, urges, wishes, cravings, goadings, and such other terms are often used to indicate these inner forces. McDougall gives a long list of instincts, viz., instincts of escape, combat, repulsion, curiosity, submission, appeal, self-assertion, food seeking, and laughter, besides the constructive, hoarding, gregarious, sex, and parental instincts which, according to him, are the "springs" of all human actions. Freud, on the other hand, reduces the number of instincts to two, viz., Eros, the Life Instinct and Thanatos, the Death Instinct. For him, the most powerful driving force in man is sex, whereas, for Adler, it is the drive for mastery and, for Sullivan and Horney, the need for security and safety. Maslow considers the "push" forces to be initially and basically biological, the most fundamental among them being the inborn physiological needs of hunger and thirst, but he holds that when these

basic needs are satisfied, that is when "man's belly is full," he feels needs of a higher order, which being fulfilled still higher needs emerge, and so on. Thus, satisfaction of biological appetites makes for emergence of social appetites which then dominate the human behaviour. According to Maslow, gratification of the biological needs leads to the development of safety needs (such as need for shelter and protection); then love and belonging needs (such as need for affection), esteem needs (such as need for achievement and recognition), and needs to know (such as need for philosophising and self-actualisation) follow.

Secondly, there are the theories which ascribe the motivating power to outer agencies which "pull" out, as it were, the response of the individual in a situation. Watson, for example, believes all behaviour to consist in actions performed by the individual in response to specific stimulations. As Curtis puts it, "Manipulation of the environment was seen (by Watson) as primary to whatever "pushes" there might be inside the individual." Likewise, according to Lewin, it is the "field forces" that draw out responses from the organism.

But, as Curtis rightly points out, neither the individual nor his environment alone can be treated as the exclusive source of motivation. There is perpetual interaction between the two and, as such, his actions are to be judged in the light of this

interaction between himself and his surroundings. Curtis, therefore, says, the motives are "biological in origin but social in expression". The theories that up-hold this view fall under the third category. According to Thomas, the four human wishes of highest significance are the desires for (1) new experience, (2) security, (3) response (from others), and (4) recognition. Maslow's theory, discussed above in connection with the "push" theories, also, in fact, has a clear reference of the inner drives of man to his social environment, with greater emphasis on the social needs of head and heart which follow the gratification of individual biological needs of the stomach.

As Smith (1952) says, "work implies something which must be done for the sake of something else, the compulsion coming either from outside circumstances, from the body or from the mind." However, Smith's interpretation of the term "incentive" clearly elucidates the relation between the individual and his environment. Incentive, derived from the Latin word "incentivus" meaning "setting the tune" thus "suggests the existence of something (motive or action) that can be set into action."

We may, therefore, conclude that there are certain needs of the individual. Some of these needs are basically biological, while some others are rather social. All needs, of both kinds, necessitate favourable manipulation of the environment for their gratification. Man's work or action aims at

bringing about appropriate manipulation of his environment in order that he may satisfy his needs he keenly feels at the moment. Some needs can be satisfied by concrete objects like food and water, while some others by things almost abstract, such as words of praise or gestures of sympathy. Sometimes objects which move a person to action are not valued for themselves but for other things which they help him to achieve. Money is an example.

The most fundamental motive that has driven mankind to discover agriculture and indulge in agricultural activities is his instinct of hunger. All men take to different vocations in order to earn some money to buy food with, for satisfaction of their hunger first, and then for satisfaction of other needs of a higher order. The people who engage themselves in cultivational work do so also for the same purpose.

Those who own lands and themselves work in their plots will naturally do the best they can to procure as much yield as possible from their land. They will also supervise the labour hired by them to the best of their capacity in their own interest. In their case, therefore, the question of motivation will mainly centre round their limitations, deficiencies and difficulties which handicap them so much in making any headway in their agricultural enterprises. Adequate steps need be taken to remove their difficulties and provide them with the help, assistance, equipments, technical training and such

other facilities as will be required to make them more confident, optimistic, zealous and methodical in their work.

Easy availability, at cheap rates, of good seeds, manure, fodder, insecticides, cattle of good breed, and modern agricultural machineries; wide-spread arrangements for adequate irrigation, river control, flood control, and veterinary services; prevention of land erosion; procurement of fresh land for cultivation; sufficient legislative measures for fair distribution of land among the cultivators and for their protection from exploitation of whatever nature; improvement of transport systems; satisfactory market facilities for agricultural products; proper orientation of the cultivators in the technical know-how concerning the use of machineries, manures, pesticides, etc.; arrangements for higher agricultural education and research and such other measures will undoubtedly usher new life and zeal in the world of cultivators. In fact, a large number of countries have been taking great interest in such measures (*Encyclopaedia Britannica* Vol. 1, *USSR Agriculture*, Savkar) for bringing about increasing motivation among the people in this sphere.

In India, the Government and the people are showing great interest in agricultural progress of the country. Block Development Projects; Community Development Projects; opening of centres for soil testing and for distribution of seeds, manures,

and insecticides ; establishment of agricultural research institutions ; appointment of Gramsevakhs who educate the peasants in the technical know-how ; import of better quality studs from abroad for cross-breeding ; opening of veterinary hospitals ; introduction of agriculture in collegiate and university education ; encouragement for cultivation on cooperative basis ; organisation of agricultural exhibitions ; award of monetary prizes and titles of distinction like "Krishi-Pundit" to persons whose harvests are the highest in the year ; improvement of transport arrangements ; excavation of canals, digging of wells and ponds, improvement of existing tanks and lakes, building of dams and water-reservoirs, river-reforms, installation of deep tube wells, etc. ; establishment of factories for producing chemical fertilizers ; regular broadcasts of programmes for cultivators ; publication and distribution of popular literatures dealing with agricultural issues ; provision of credits at cheap interest rates through the nationalised banks and such other institutions ; programmes for popularising the use of improved machineries in cultivational work ; wide-spread use of high-yielding seeds, like 'Jaya' and 'Padma' (varieties of paddy), discovered by the researchers ; extensive practice of growing several rounds of crops in the same field by using appropriate varieties of seeds like 'Taichung' (a Japanese variety of paddy) ; enactment of Laws, from time to time, in favour of the small cultivators ; and,

above and over all, an intensive "Grow More Food" campaign have, indeed, brought forth a remarkable advancement in Indian agriculture. Harrar (1971) has given a nice picture of the green revolution in India in the recent years. To quote him, "In India, in 1967-68, only 18 per cent of the wheat acreage was sown to the new dwarf wheats conceived for the green revolution—but these varieties produced 40 per cent of India's total wheat crop. In 1968 the national average Indian wheat yield was 1,300 pounds per acre, a 62 per cent increase over the average for 1962-65." It is, of course, true that the measures for advancement in agriculture in whatever country are to be continuously multiplied, improved, and expanded for keeping the pace of progress steadily increasing.

The poet says, "the old order changeth yielding place to new". But everybody knows how difficult it is to free the human mind of its old convictions, of its deep-rooted superstitions and of its love for the convention and fear for a change. This psychology operates among the farmers when they are called upon to use new techniques and methods in their work even with an assurance for better results. Yet conservative though it is, the human mind is also rational and prone to accept changes though with caution. Nazareth (April 1971) describes how strenuous it was to convince the farmers of an Indian region that use of tractors would bring them a bright future, but convinced they were.

Example is an effective incentive. Gabrani (June 1967) put it nicely as he said, "When neighbouring farmers see one of their own men benefiting from the new techniques and obtaining increased yields—which till yester-year were no better than theirs—they know that they too can have bountiful crops. Their success, in turn, influences others, and a chain reaction sets in." Marriott (USIS publication, 1974) cites an example of an Indian village where a single farmer tried some improved seeds and new fertilizers in 1962 and this incited eight or ten others to do the same in the next year and by 1965 all the farmers of the village were using the new seeds and fertilizers. Thus when someone is bold enough to break through the old tradition others also feel encouraged to do so and this tendency is reinforced by concrete gains that follow the change.

According to Dr Borlaug (Stanley 1972), who is the most prominent figure in the architecture of "green revolution", demonstration of substantial concrete gain in output—double, triple, or quadruple the usual output, if possible—in a farmer's own plot of land through the use of proper seeds in proper ways is the best incentive for him to accept the new strains of corn, and also of new technology in general. He won't be convinced with small differences in yields, nor would he feel tempted to use these strains or the new technology by simply noticing the striking results of their use in Government

farms, for he believes the Government have enormous funds to invest in their lands, funds he can never think of ever getting at his own disposal. The smaller and poorer the farmer the greater is his reluctance in this respect. "But when he sees it done on his own plot of land, where he has actually seen the whole operation or has participated in it, he himself becomes a very effective extension worker and will carry this to his neighbours and relatives not only in the village where he lives but also in distant villages where he has other relatives."

Use of better techniques, improved seeds, better fertilizers, better machines and the like not only increases the agricultural output and brings more money and material comfort to the farmers but also gives them ample leisure and scope for healthy relaxation and upliftment of their spiritual life. Spiridonov (June 1974) speaks about the Soviet workers, including the collective-farm peasantry, of the 70's in the following words on this issue: "...man does not live by bread alone. This directly refers to the present-day Soviet worker. He is distinguished by a variety of spiritual demands, by a profound interest in scientific and creative work, and by the striving towards all-round development and perfection. In this respect, the changes in the make-up of a worker's leisure time are typical. Whereas in the first years of Soviet power he spent less than two hours a week on studies, now—according to the survey conducted of the leisure time of the workers

of Krasnoyarsk—men spend 18·8 hours a week and women 7·4 hours on studies and self-education. This makes it possible, not only constantly to enrich one's spiritual world, but also to participate directly in the creation of cultural values. One of the highest examples of this is provided by the unusual level people's creative art has reached. At present, 14 million people take part in amateur artistic activities." Marriott (July 1969) describes how the use of new techniques, tube-well irrigation, improved seeds and better fertilizers not only doubled production, improved the standard of diet of the farmers and provided each landless labourer with employment in an Indian village, but also brought about a sense of awareness, local initiative and creativity among the farmers of the place.

In South Vietnam the Government of the country has been trying to enthuse the small farmers who "have always been prey to uncertainty" by encouraging cooperative farming and granting loans, two-thirds of which are granted without collateral, through branch offices of the Agricultural Development Bank, which is a state organisation (Span, April 1971).

Jamalov (July 1973) ascribes the success of the cooperative movement in Soviet Central Asian Republics and Kazakhstan which was over by 1938 largely to the active participation of the poor peasants in this movement which was possible by providing them with various incentives in the forms of

numerous facilities—monetary, equipmental, and otherwise.

The problems of motivation in regard to the landless hired labourers in agriculture, however, seem to be quite different. Their needs, it seems, are largely akin to those of industrial workers, while they have also some needs that are peculiar to them. As they do not have any share in the ownership of the land which they cultivate, it is quite natural that they will not have as much interest in ensuring a higher yield as has the owner of the land who employs them. For their motivation, therefore, such measures as are conducive to their personal benefit and job-satisfaction will have to be adopted. Besides regular payment of handsome wages with scope for periodical increments, they would require rest, recreation, recognition, good treatment, appreciation, encouragement, security, specific duties, convenient working hours, good working companions, improved living conditions, adequate medical facilities, etc. which have been found necessary also for the motivation and efficiency of industrial workers (Drever 1947, Tiffin 1951, Smith 1952). Proper arrangements should also be made to provide them, whose services are hired only seasonally, with profitable alternative occupations during the seasons when they do not find any agricultural job at hand. The hired labourers in agriculture also need to be properly oriented and taught the technical know-how as much as

it concerns them.

People who hire others' services generally tend to think that the more these labourers work the better it is for them, for more work means more output. So they are in favour of granting as little rest as possible to the persons they engage. But psychological investigations reveal that continuous work causes fatigue, boredom, and aversion which adversely affect the efficiency and morale of the worker. Introduction of timely rest-pauses of optimum length results in increased output and sustains the worker's interest in his work. The rest-pause, however, has to be introduced when the worker shows signs of fatigue and weariness and it should not be too short or too long in duration. Too short pauses will be too inadequate to remove the fatigue-effects, while too long pauses are likely to mar the practice-results.

Like rest, recreations are also important in the life of a worker. They remove the boredom and monotony in work and instil new vigour and energy in his mind. Funs and amusements of appropriate kinds need, therefore, be arranged for the agricultural labourers, particularly when they have ample free time at their disposal. Witty gossips, playing at cards, reading or narration of stories from the epics and the puranas, singing in chorus of holy verses, playing on the bamboo flute, theatrical performances, operas, folk dances, folk songs, simple outdoor games, bull fights, buffalo fights, cock fights,

and such other activities are a few examples of funs and amusements in which the Indian agricultural labourers usually indulge during their leisure hours. A large number of festivities which they regularly celebrate (some of which have been discussed earlier) are also a source of great mirth and merriment for them. All this they do on their own initiative. Some measures that are recreational and educative at the same time are also being adopted from time to time by the Government and the local people. Establishment of rural libraries, peasants' clubs, and night schools for the illiterate adults ; film shows on agricultural progress ; agricultural exhibitions and cattle shows are a few illustrations.

In the Russian cooperative farms libraries, field-camps, evening schools, study circles, seminars, lectures, clubs, T.V. sets, cafecanteens, stadiums, cinema theatres, newspapers, magazines, and various artistic activities are some common examples of recreations for the farmers (Spiridonov, June 1974 ; Svetlanova, July 1974 ; Jamalov, July 1973 ; Soviet Land, November 1973). Such recreations characterise the farmers' life also in other advanced countries. The developing countries are also gradually catching up. Nanda (March 1969), for example, describes how the Young Farmers Institute, founded by a noble lady, Mrs Fisher, near Lucknow in India, has been rendering great service in filling the leisure hours of the local peasants with valuable ex-

periences provided them through lectures, discussions and short courses in agronomy, animal husbandry, horticulture, and farm management and also through literacy programmes and extension work. The Extension Services Departments of the Indian Agricultural Universities are, similarly, playing a very significant role in this area. Reza-zuddin (Feb. 1972) rightly observes that "Extension work is an effective medium for the rapid transformation from traditional to technology-based modern agriculture." It is needless to say that an effective extension programme will aim not only at uplifting the material standard but also at upgrading the spiritual level of the farmers of the locality it covers.

As others, the agricultural labourers also have the basic needs for love, response, respect, recognition, and appreciation. The employers will, therefore, do only good to themselves if they remember these things and behave accordingly with the workers they engage in their fields and farms. Some words of sympathy, some appreciation of worth, and a little show of respect may work like miracles in energising the worker and raising the level of his efficiency.

It goes without saying that the standard of living has a tremendous impact not only on the attitude and morale of the workers but also on their capacity for work. Any measure to improve the living conditions of the agricultural workers will,

therefore, abundantly contribute to the progress of agriculture in the ultimate.

The measures that are being adopted all over the world today, though naturally in varying degrees in different countries, are, on the whole, indicative of an effective realisation, on the part of the agricultural planners, of the need for motivating the land owners as well as the landless agricultural labourers in the activities connected with cultivation. They will surely be benefited if, while planning, they take into due consideration the most fundamental and vital human motives identified by psychologists, a good number of which have been listed above.

CHAPTER—X

PSYCHOLOGY OF DEALERS AND CONSUMERS IN AGRICULTURAL COMMERCE

Marketing facilities constitute a significant incentive for increased production in agriculture. Agriculture, in the widest sense of the term, includes not only cultivating plants but also raising fishes, birds, and animals, and thus, poultry, dairy and fishery products also come within the range of agricultural output. Most of the agricultural products require immediate disposal, particularly in tropical countries, because with the passage of time they quickly lose their flavour, taste, and freshness. This adds to the urgency of marketing in respect of agricultural products and also of scientific researches for evolving means of preservation not only of their outward look but also of their quality including taste and smell.

Broadly, there are two kinds of sellers, the wholesalers and the retailers. The wholesalers generally buy their commodities from big and small cultivators belonging to places far and near and sell

them at higher prices directly to the consumers or through retailers in the market place. Small cultivators are compelled to sell out their produces at nominal or low prices to wholesalers when there is no better marketing arrangements in the vicinity, nor any easy communication connecting them with distant market places offering higher profits. This, naturally, exerts a freezing influence on their zeal to produce more. Thus better marketing facilities including transport arrangements appear to be an effective incentive particularly for the small cultivators of distant rural regions.

Supply of agricultural products is made at different places : (a) at the source, such as farm, poultry, and dairy ; (b) in permanent shops ; (c) at market places or bazars which may sit daily or periodically at selected sites ; (d) at indefinite places where hawkers happen to be present ; or (e) at the house of the consumer when arrangements for regular supply by fixed sellers are made in advance or when stray hawkers visit his house. Supply is also made to distant places through import and export systems according to demand for the commodities and nature of the existing transport facilities. In many cases, quality products of a locality do not find a wider market mainly for want of satisfactory means of communication.

Drever (1947) has classified the prospective buyers into four types— “the buyer A with the will to buy and with complete and definite knowledge of

what he wants, the buyer B also with the will to buy but only a general idea of the kind of thing he wants, the buyer C with money which he desires to spend but only the vaguest notion even of the kind of thing on which he ought to spend it, and the buyer D who is merely not unwilling to buy." Drever further holds that the art of the salesman concerns only the B and the C types, since A is already determined and has a clear notion of the thing he would buy, while D with his hazy and unstructured proneness towards making purchases "will seldom give the salesman any opportunity of displaying his skill."

Yet it seems that at least in the agricultural market the salesman has something to do with the A and D types of buyers also. For instance, a buyer of the A type who intends to purchase a quantity of class one potatoes, grown in a particular area known for its quality production, will certainly not prefer any and every piece from such a stock; on the other hand, he would look for the best pieces that are well maintained, well shaped, and scarless. Here the salesman has a scope to prove the quality of his stock to the prospective buyer and cause him to decide to make the purchase from his shop. In fact, it is found that often inferior products sell at higher prices than superior products simply because the seller's approach is more attractive and convincing.

Persons having some money with them and

happening to pass through a bazar on their way from one place to another, will belong to the D type. They were not out for shopping. They had no urgency about purchasing anything in particular when they set out. But when the salesman is an expert in his art he can easily detect if such a prospective buyer has any implicitly felt need for his commodities. If, for example, he looks tired he may welcome the idea of drinking a cup of milk or eating some delicious fruits. Likewise, his attention may be drawn to the "first arrivals" of a seasonal crop and to the justness of the price demanded. In that case he will very likely feel tempted to buy some of these articles for giving a pleasant surprise to the members of his family or to his friends and relatives he may be going to visit.

A buyer who can spend only a little money and is, therefore, not at all sure about what items he can buy with it will belong to the C type of the above classification. A salesman has obviously much to do with such a buyer. He can help him choose from his stock by presenting to him different varieties of his commodity or different kinds of commodities having different prices. His sympathy, willingness to help and rational argument are likely to win the mind of such a buyer. C type buyers with greater purchasing capacity will also be helped to come to definite decisions in the same way, especially if the salesman explains to them the utility and quality of his commodities. B type buyers will

obviously require only a little less persuasion.

As a matter of fact, the seller's art of talking and his manners with the buyers carry a great weight in the matter whether he would succeed or not in quick and profitable disposal of his stock. He must be patient and polite. He must not hurt the feelings of the buyer, nor should he wound his sense of prestige by making such remarks, for example, that the buyer hasn't had enough money to buy his goods which are of a respectable standard and should, therefore, go to some other shop of an inferior merit. Such remarks not only infuriate the buyer at the moment but also create in him a permanent hatred and aggression against the seller and, as a result, he refrains from visiting his shop and also influences other prospective buyers against him. Elements of humor and witty remarks in his talk make a seller highly and irresistibly attractive, so much so that buyers do not mind even to pay more money for his articles in preference to buying such articles at a lower price from a harsh-talking or owl-faced dealer.

Reliability is a great asset of the dealer in bringing about stability and profit in his business. Those who supply best things and maintain ready and regular stocks of their articles attract more consumers who would not hesitate even to pay a little more in buying things from them. 'Good will' of the consumers which is so important for success in business grows out of their feeling that the dealer

will not cheat them or put them into trouble. There are many families which arrange regular supply of such articles as eggs, fish, vegetables, milk, etc. at their own places by fixed sellers. If such supplies are irregular and unsatisfactory they find their daily domestic routine to be highly disturbed and dislocated and, in extreme cases, cancel their contract with the seller causing him enormous loss and even temporary disadvantages to themselves. Sometimes extreme greed of a dealer who does not hesitate to claim exorbitant prices even from his old and good-willed customers in order that he may make a huge profit overnight brings about his ruin within a short time because the customers soon find out his tricks and begin to avoid or even boycott him in a body.

There are prominent individual differences in food habits. Different people have strong likes and dislikes for different food items. There are also individual and social prejudices in this matter. For example, a person is likely to have developed a special taste for things he had relished in his childhood days, no matter however trivial they are. These articles which were in abundance at the place where he spent his childhood may not be available in his present environment. Yet he has been cherishing a strong like for these things and will not mind spending a high price for them if they are made available to him now. some persons, for instance, are very much fond of certain fruits

and they fondly wish the fruits of their choice were available all the year round. Proper preservation of such fruits and their steady supply in the market will undoubtedly attract these prospective buyers.

Individuals also change their food habits and develop new tastes according to changes in the pattern of their social life. For example, immigrants bring with them a set of new tastes which the people of the locality of their migration gradually pick up. They also develop the local tastes in course of this intermixture of cultures. People also gradually develop tastes for food items, such as cereals, vegetables, fishes, etc. regularly imported from foreign countries and supplied in the local bazar. Some products of certain localities have, again, a long standing reputation behind them. Tea of Darjeeling and Ceylon, jute of Bangladesh, oranges of Shillong, roses of Basora, potatoes of Naini Tal, sheep of Australia, wheat of Haryana, cotton of the Decan, mangoes of Malda are some such examples. Customers appear to have developed a sort of blind preference for such objects. The good will of the customers which these things enjoy, of course, depends on honesty of the traders and maintenance of the traditional standard of these produces.

So what is needed is periodical survey of food habits and allied practices—individual differences in this respect—so that supply may be made accordingly. This offers a splendid scope of psycho-

logical research in an important area of agricultural commerce.

Like likes and preferences, there are also dislikes and prejudices in respect of food items. An individual develops distaste or aversion for certain items of food with which are associated some kind of bitter experiences of his past life, particularly of his childhood days. There are also religious and social taboos peculiar to different sects. For instance, the cow which makes a palatable dish for the Christians is a religious and social taboo for the Hindus. Again, a Hindu Brahmin widow will not eat fish, eggs, meat, and some cereals on religious grounds. For the same reason she will not eat specific items of vegetable on specific religious occasions. Sometimes the ugly appearance of a creature, such as the tortoise, is a strong reason for a person's dislike for its flesh. In some cases, wrong notions of medical and hygienic implications are responsible for bias against certain foods which may even contain useful vitamins in sufficient quantities. Some people, for example, would not take hen's eggs or mutton for they think that such foods will excessively heat up their system. Some, again, would not take certain fishes, *Telapia*—an American species, for instance, because they believe that these fishes carry germs of complex diseases. People are also often guided by a false sense of prestige in their choice of food items. As for example, rich people or those who reside in aristocratic localities

may think it to be incompatible with their dignity to eat small fishes even though they may have some liking for them. People often do not know that certain very common things which cost little may have enormous food value. This ignorance on their part makes them indifferent about such items. Thus proper training of consumers through exhibitions, advertisements, talks and lectures, through the radio and the cinema, and such other methods and media will not only create scientific attitudes among the consumers but also, at the same time, open up new vistas in agricultural commerce and widen the existing horizon of the market of agricultural commodities. Success of such training will certainly depend on the efficacy of the tools and techniques, employed for the purpose, in stimulating the suggestibility of the consumers of agricultural products.

Sympathy, i.e., the psychological state of feeling as others in close proximity, underlies many decisions of the customers to purchase specific things at given moments. Of course, the art of the salesman counts much in the matter of arousing this sympathy in the prospective buyers. His witty and convincing words encourage some to buy his articles and many others quickly follow them. If the articles satisfy the consumers' need of the moment then this will act as an additional stimulus. Railway hawkers are an example of such able salesmen. They not only talk interestingly but also supply

things mostly needed at the moment, for example, cups of hot tea and coffee in winter and cocoanuts and cucumbers in summer.

Thus Psychology has an important part to play in promoting the cause of agricultural commerce. Survey of food habits, changing food habits through publicity and education, training in salesmanship and many other important programmes in agricultural commerce must take the relevant psychological factors into proper consideration for their successful execution and effective implementation.

CHAPTER X I

TRAINING OF AGRICULTURAL PERSONNEL

Training of agricultural personnel is an important item of agricultural planning. Unless the people engaged in agriculture are rendered ready to accept and able to apply new technology in their craft, progress in agriculture will ever remain an idle thinking.

Agricultural personnel, in the widest sense, include several categories of people—land owners, labourers, farm-house staff—both managerial and ministerial, technicians who produce agricultural instruments, people who deal in agricultural products, veterinary experts in charge of cattle health, agricultural officers of various ranks, members of agricultural institutions devoted to training and research, agricultural administrators and a host of such other people vitally connected with this vocation.

There will always be room for training at each level in whatever field, for human knowledge is ever

expanding leading to the development of newer and newer requirements that demand better organisation of the older skills and cultivation of newer ones for their proper fulfilment.

Training of personnel is not an easy task. At all levels it is associated with lots of special problems. Training programmes for different categories of people, engaged in different sectors of agriculture, will, therefore, be different. We, in this chapter, will concentrate on training of the illiterate or semi-literate farmers, in particular, who constitute the vast majority of the agricultural population.

The first task of the trainer will be to counteract the psychological inertia of these people who have been long accustomed to the traditional method of cultivation resulting in a sense of complacency with their own ways and a sort of antagonism and aversion for deviations from the traditional track. The smaller and poorer the cultivator and the narrower the range of his profits the greater will be his resistance against changes. This inertia can be nullified only through actual demonstration of the efficacy of newer methods and their accessories, if possible, in the farmer's own plot of land (Stanley 1972). As it is not possible to arrange such demonstrations in everybody's plot of land, tracts of state-owned lands or lands belonging to the training institutions or selected farmers may be used for the purpose. But the trainees will have

to be directly associated with each and every step of all the operations so that they may not have any scope for any suspicion or doubt regarding either of the processes involved in the design. As concretisation of lessons is necessary in lower classes and students in such classes are more interested in immediate material presents than in mere words of praise and future promises, so also the illiterate farmers will be convinced only if they see better results of newer methods happening before their very own eyes.

In applying the demonstration method of training, enough care should be taken to control the various factors involved in the experiment. Let us take an example. Suppose the trainer wants to demonstrate the superiority of tractors, a kind of fertilizer, and a type of seed. The best design would be then to use four adjacent plots of similar soil quality having similar watering arrangements. The first plot will be tilled by the plough, fertilized with the usual manure and sown with the usual variety of seeds; in the second plot the plough will be replaced by a tractor; in the third the plough and the usual manure will be replaced, respectively, by a tractor and the new fertilizer; and, in the fourth a tractor, the new fertilizer, and the new variety of seeds will be used. If now the second plot yields a larger harvest than the first, the third than the second, and the fourth than the third then it would be quite easy for the farmer to "see" the

superiority of these new factors and be convinced of the rationale and urgency of their application in his own land. The greater the ignorance and resistance of the farmer the larger will be the need for demonstration of the efficacy of different factors in isolation. More intelligent and insightful farmers may grasp the combined effect of several factors on output with lesser difficulty. Once the farmer is convinced of the usefulness of a new device he would himself be eager to learn all about it.

Another important point for the trainer to note is that the farmer will be interested in learning about only such tools and techniques as will be well within his reach to procure for use or application in his personal plot of land. A very poor farmer will not naturally be interested, for example, in a tractor because he knows it costs an amount which he is unable to pay unless substantial aids are forthcoming from some quarters in the form of charity or loan on the most economic terms acceptable to him. Researches show that sometimes little changes, e.g. some changes in the mode of sowing or planting, or use of a different seed which is quite cheap, or application of a different manure that can be easily prepared at home may bring about remarkable results. The trainer has got to stress more on such measures, particularly with the poorer peasants who cannot afford to spend much after their personal plots or procure any assistance from external sources.

The need for demonstrating the advantages of new technology (including the use of better tools, techniques, etc.) is far more pronounced in the case of farmers and agricultural workers than in the case of factory owners and factory workers for two reasons. First, the number of the former is far larger than that of the latter, and, secondly, even among the agricultural workers there are many who have a sense of possession of the crop they raise because they have some holdings of their own, however small these may be, or because they grow the crop as share-croppers or members of a cooperative. The factory worker, on the other hand, works for others and, thus, naturally has not so prominent an urge for being convinced of the new technology. He will just do as required by his employers.

Lessons for the farmers should be imparted less through lectures given within the four walls of a room and far more through actual demonstrations, identifications, verifications, and explanations of agricultural phenomena—things and processes—in the open field in their natural contexts. This would make the lessons realistic, interesting, meaningful and fascinating. Identification of various pests and insects, of the symptoms of different plant and cattle diseases, of the characteristics of soils of various types, verification of the evil effects of soil salinity, water deficiency and land erosion ; demonstration of better capacity of deep tube wells and

ploughs, spades and shovels of improved types and thousand other items like these will strengthen and systematise the farmer's power of observation, help him develop scientific attitudes towards his work and make him knowledgeable, confident, optimistic and bold to accept changes for the better.

Informal and popular education seems to be more practicable than formal institutional education for the vast mass of illiterate farmers, especially in the developing and under-developed countries. Popular methods of training through film-shows, radio and television programmes, stable and moving exhibitions, dramas and operas, mass meetings, folk songs and ballads, anecdotes, talks by local and guest experts and government officials, etc. will be more effective because they have a popular appeal, they can influence a large number of people at the same time, they demand very little exertion on the part of the individual and they create a festive atmosphere as they are recreational in spirit and involve a great mass of people with identical or similar interests. In fact, group or mass learning may reasonably be expected to be more appealing than segregated individual learning where the mental attainments of the learners are still at a low level. Even in the matter of formal technical training of the illiterate farmers the method of mass training may be adopted with success. "When a number of people are learning an activity together", says Smith (1952), "there is the

interest of the group and the stimulus of reasonable rivalry, there are other people as ignorant as oneself, and certain faults can be corrected in the group without the inexperienced worker feeling as nervous as when he is the only one."

The scope of informal education is much more limited in the case of industrial workers than in the case of farmers, because the former work with machines, many of which are rather too complex, and, thus, they are required to develop complicated skills which can come only through prolonged, intensive and technical training of the formal type. The farmers' tasks, on the other hand, are, in most cases, much more simple and most of the tools they are required to handle are also not as complex.

Learning here, as in all other cases, has got to be associated with joyful experiences in order to be effective and durable. This is a fundamental law of learning. The trainer's approach and personality and the attraction-value of the aids and implements he uses will go a long way to render the trainee's task a work of joy. The trainer has to be sympathetic and compassionate towards the farmers he is training. He must be patient and try to understand their difficulties. He must come down to their level when he is explaining something to them or helping them handle a tool or apply a technique. He must have enough openness of mind to accept logical suggestions from the experienced and wise farmers among his trainees as and

when such suggestions are offered. He may also invite comments and opinions from his trainees from time to time as this will give them a sense of status and prestige and also a feeling of identification with the programme.

Communication between the trainer and the trainees is always a vital concern in all training programmes. This is more so when the trainees belong to the lower economic stratum of the society and are mostly illiterate. Success of a training programme, in such cases, will largely depend on the extent to which the psychological distance between the trainer and the trainees has been contracted. A successful trainer will, therefore, do everything to establish a rapport with the farmers by giving them appreciation, recognition, and importance in abundance. He will mix with them freely and friendly, visit their homes occasionally, participate in their festivals and ceremonies, pick up their language with its regional shades, and show them courtesy and respect whenever he meets them.

Often the farmers' reservations, superstitions, and language difficulties stand out as a bar to their understanding and confiding in the trainer who is an outsider. In such cases the headman of the trainee-farmers whom they understand thoroughly and whom they obey without questioning may be picked up and trained first. The trained headman will then be given the status of the first trainer. He will be readily acceptable to his fellowmen. He

will argue with them and explain matters to them, and thus the task of mass training will be easier and less time-consuming. Of course, the expert trainer will be always there by the trained headman to give him the help or guidance as may be necessary. This raising of status of the headmen will enhance their sense of self-importance and make them more responsible and energetic about their new assignments. It should, however, be noted here that the headman of a group of farmers is not necessarily the richest or the most educated amongst them. He may be an unlettered poor person who is nonetheless loved and respected by his fellow-men for his wisdom and integrity. He is sympathetic towards them, understands their problems and gives them proper counselling when they are in difficulty. Such headmen, it may be normally expected, will be found in all farmer societies. The services of these people, if properly and tactfully utilised, will, therefore, be of immense value in executing mass training programmes for the poor and illiterate members of the farming section of our population. If persons with some formal general education and right attitudes are found in some of the farmers' societies their services may also be requisitioned for the purpose. Their general education may enable them to understand, without bias, the logic of the new technology more easily than their unlettered fellow-men and, thus, they may be more at ease in mastering the technicalities offered by the training.

Their services in training up the rest of the group will also be quite useful.

The teachers and students of the rural schools, particularly those which impart work-centric or work-oriented education with provision for conducting agricultural projects, may also be associated with the programmes of formal and nonformal training of the farmers of the locality. This will integrate the school with the society, heighten the social status of the peasants, introduce the students of these schools to the realities of agricultural enterprises in their immediate environment, make this education more meaningful for them and at the same time benefit the farmers by serving the cause of their training to a considerable extent.

Training of the trainers who are deputed to villages as expert counsellors, like the Gram Sevaks in India, has got to be sound and satisfactory. If whoever with some formal general education and a little technical training is so deputed for the purpose there can be no doubt that he would meddle up things, impart wrong guidance and confuse the farmers. Little learning is always a dangerous thing and it is bound to bring in chaos and confusion. Hence extreme care should be taken in the selection of training personnel. The expert agricultural counsellors who are deputed to villages will fit well in the rural environment only when they have developed love for the village folk, liking for solitude, fondness of Nature and such other quali-

ties. People having rural backgrounds will, therefore, prove better for the task provided, of course, they have also a thorough training in the relevant technicalities.

Another important point is that mere training in the use of a device or an installation will not do. Sufficient measures need be taken for regular supply or maintenance of these things in order to keep up or increase the farmers' enthusiasm. For example, if a deep tube well is installed in an area but soon goes out of order and is not mended over a long time the farmers' interest in it will quickly evaporate. Similarly, if a canal is dug in a region but no systematic supply of water from there to the farmers' plots is arranged and ensured it is quite natural that the farmers will lose all interest in it. The psychological fact of very grave implications in such situations which should be borne in mind by the agricultural planners and reformers is that resistance that grows out of frustration caused by loss of something achieved is likely to be greater than the initial resistance one feels in making efforts to achieve the thing. Such frustrations will naturally make the farmers feel duped and helpless and render them still more antagonistic towards further training.

As regards training hours, no fixed hours, it seems, will be advisable, for farmers will hardly have any extra time to spare in their working seasons as they would badly need rest and recrea-

tions after the day's hard labour. Hence their training has to be synchronised with their work as far as possible. Such training will also be more meaningful to them. Off-the-season days or days of periodic rest may also be used for training purposes. If some sorts of amusements are organised at the place of training on such occasions the farmers will feel attracted and, thus, regular and larger attendance will be ensured.

Concrete and substantial incentives in the form of monetary rewards or presentation of articles of agricultural value or some material facilities for the best few performances will also encourage the farmers to offer for the training in question. In fact, many more clues will be found in the chapter on motivation which will help the planners to organise their training programmes for the farmers in an interesting and effective fashion.

CHAPTER—XII

PSYCHOLOGICAL FACTORS IN AGRICULTURAL MANAGEMENT AND ORGANISATION

The term management (in a wide sense), as defined by Smith (1952), means 'the application of skill in the control of things or persons.' As agriculture involves both men and things and as some people are required to control, in different capacities at different levels, these living and non-living agricultural forces and come upon a host of psychological problems in this process we can very well conceive of the importance of agricultural management as an item of discussion in agricultural psychology.

The farmers who hire others' services for cultivation of their lands, the small or big farms that deal in plant and animal products and employ workers for the raising and selling of such goods, the agricultural cooperatives which require the co-operation of various people in different positions, agricultural offices—governmental or autonomous—that are responsible for the progress of agricul-

ture in particular areas of the country or in the country as a whole are all concerned with the questions of (a) proper management of manpower—selection, training, placement and motivation of workers and officials and (b) proper management of things—improved types of seeds, fertilizers, implements, insecticides, etc., etc.

As emphasised by Cochrane (1971), "A modern, scientific agricultural economy is absolutely dependent upon skilled manpower for its research and development, its farm management, and its general administration." As those engaged in agricultural research or appointed to managerial or administrative posts in farms and offices will always be far fewer in number in comparison with the millions toiling in the fields in the country-side, the problems of selection and training of personnel of the former category will ever be less acute than that concerning the latter. The former's training will also have to be more formal and intensive and arranged in highly specialised institutions established for the purpose.

Often the justness of selecting the right type of workers does not occur to the farmer when he is uneducated, poor or interested only in immediate gains. He would prefer an unskilled worker to a skilled one if this entails less expenditure, meaning more immediate gain. Poorer farmers will reasonably do so out of economic considerations as they are unable to spend more money on their holdings.

And in developing and under-developed countries where unemployment is a common feature cheap services are readily available at hand. Often a farmer would appoint an unskilled labourer with the conviction that the latter would learn from experience and improve under supervision. Such a farmer is obviously ignorant of the psychological facts that a "predisposition or natural ability" for the skill has got to be present in the person selected in order that he may subsequently turn into a proficient worker under training and superintendence and that hard work cannot help him develop the natural ability which is wanting in him. Hard work, as Smith (1952) points out, "will improve lesser ability but not produce it." Then, again, there are many farmer families which maintain a permanent staff of workers throughout the year. Such workers are found quite suitable for a lot of simple agricultural activities that have got to be done very frequently by way of preparation for the major activities ahead. When the need for more skilled work arises the farmers naturally feel hesitant to employ an additional band of abler workers because they have already some workers at hand to carry on with. They also have developed some sentiment for the permanent staff because of their close and long association with them and thus wouldn't hurt their feelings by engaging another set of workers on the plea that they are not able to do the next work as efficiently. Thus economic and

social considerations and inertia and ignorance of the farmers often stand in their way of selecting the right type of workers for the right type of job. What is true of individual farmers is, it appears, also true of institutions in some cases. Proper education and orientation of the agricultural employers, considerable financial and material aids, wider scope of employment for the landless agricultural workers and similar other measures will surely improve the situation.

For quick and minimum training of the workers in the field, which is an immediate and essential requirement of the developing countries, at least one expert with adequate training and proper orientation should, it seems reasonable, be posted in each village, if possible, for giving necessary guidance to the local farmers. And arrangements should also be made for frequent supervision of these on-the-spot experts by higher officials, more educated and more experienced in agricultural technology. All steps need be taken to organise the training of all such experts in such a way that they are required to spend considerable periods, during training, in villages and participate in actual agricultural activities in fields and farms along with the farmers so that they may come out equipped not only with sufficient theoretical knowledge but also with enough practical experience and a real love for the rural environment, besides a liking for the village people. Such training

will make them more eager for field work, which is a greater necessity in the developing countries, than fashionable desk work with all its sophistications.

The landless agricultural workers, the sharecroppers and the very small farmers who supplement the income from their own land by working in others' fields on wage basis cannot be made agreeable to undergo any training whatsoever unless they are assured of larger profits in return. If a handsome share of the higher crop they produce in others' fields by employing the improved techniques and putting in more sincere and harder labour is guaranteed only then, it seems, they will be really interested in mastering and applying these techniques. They may not be as much interested even in monetary rewards in the form of bonus or commission as in actual shares of the higher crop they will thus produce. In West Bengal, for example, there are certain areas where the agricultural day labourers accept not money but food grains as wages for their services. And this is an age-old practice. Interest in food grains as remuneration naturally becomes stronger among such people during the days of food scarcity. Industrial workers, on the other hand, are not thus interested in the articles they manufacture. They are interested in larger monetary rewards for larger production. They know commercial disposal of these goods at profitable prices, which requires

enough time, sufficient fund and complex organisation, is beyond their individual capacities. As they live in urban areas they are also exposed to a larger variety of social and cultural stimuli which create in them a variety of needs and desires of the secondary order which can be fulfilled with the help of money alone, whereas with the farmers who live in villages offering a narrow range of stimulations the greatest interest lies naturally in food which is one of the primary and basic needs of all living beings.

Besides making provision for greater immediate profits going to the agricultural labourers and share-croppers in the form of handsome shares in the crop they produce, the measures suggested in an earlier chapter for their proper motivation should also be adopted to make them happy and efficient in their work. For example, they should be treated humanely by their employers, allowed rest in between work, given better material facilities and the like.

As Cochrane (1971) rightly points out, all efforts should be made "to assist the small farmers to participate in the production revolution"; otherwise, "that revolution will be aborted, and new and greater social problems will be created as the small farmers are "gobbled up" by the larger, more aggressive farmers." If the know-how of new technology, better materials and greater facilities go to the big farmers alone, depriving the smaller ones, this will not only slow down the pace of progress

by keeping a vast majority of agricultural producers out of the grow-more programme but also increase the aggression of the big farmers, inflate their egoistic feelings, intensify the frustration of the small farmers and enlarge the social and psychological distance between the two groups, whereas neither of these consequences, but only well-integrated cooperation among all the farmers, big or small, is really conducive to agricultural progress in whatever country. As the big farmers are economically better-off, more lettered, and more influential they would naturally come forward and try to avail of most of the aids and amenities that may be created for the agricultural population. The small farmers, who are in a worse position, are not only, in many cases, inert and indifferent but also timid and shy and hesitate to approach the proper agencies for help. They are also liable to exploitation by some others who may offer to act as intermediaries between them and the agencies concerned. Also many of the small farmers do not, it appears, know about the kinds of aid that they may get from private or public organisations. Hence, if agriculture is to thrive, all steps will have to be taken to enlighten, encourage, and equip the large number of small farmers, along with the big ones, with equal sympathy, interest, and helpful attitude.

The findings and fruits of agricultural research, in order to be of maximum value, must be carried

to the doors of the farmers, big and small. Better seeds, fertilizers, and implements have to be made readily available to them at rates they can pay and they have to be trained in the methods of handling these things scientifically. For this, substantial financial aids in the form of loans and grants and also supply of seeds, fertilizers, etc., free of cost or at cheapest possible prices, will have to be accorded to the poor farmers in particular. Constant and effective supervision may be necessary to ensure proper use of these aids, especially by the poorest of the farmers, so that investment of the aid in agriculture, and not its disposal in meeting other immediate needs, may bring them a richer harvest a few months later and thus place them steadily on the way to gradual economic betterment and prosperity.

The maximum requirement of the poor farmers and agricultural labourers is that they must have sufficient food grains to go with throughout the year. This will free them from psychological tensions and also enhance their efficiency. This can be ensured to a very large extent by using high-yielding seeds with good fertilizers and raising as many crops as possible from the same field in a year. In countries which mainly depend for their agricultural success on the mercy and vagaries of the sky things are always uncertain. Excessive rainfall or drought often mars their agricultural potential. In such cases adequate irrigation arrangements—deep and large reservoirs, wide-spread net-work of canals,

deep tube wells, effective measures of flood control, etc.—will have to be made for profitable exploitation of men and materials in ensuring higher yields round the year. Of course, there must be such provision that a substantial portion of the crops which the small farmers and landless labourers will grow in others' fields will go to them as their share so that they may be more and more enthusiastic in bringing about larger and still larger yields out of the realisation that higher and more frequent production in their employers' fields means greater benefit to themselves.

Greater cooperation among the neighbouring agricultural cooperatives, state farms and industrial enterprises will, obviously, also be a point of serious concern in agricultural management and organisation. Such cooperation amongst the related sectors is likely to increase the quality and quantity of output in each of the enterprises through coordinated use of their combined resources—manpower and material equipments. This will gradually result in greater prosperity of all the parties concerned including the workers. In fact, encouraging results are being obtained in Soviet Russia through establishment of "agrarian-industrial complexes" which are now considered to be of "fundamental socio-economic importance" in that country (Strelyany, Aug., 1974).

As rightly emphasised by Bellows (1950), "the goal of management is the maximum use of per-

sonnel accompanied by maximum worker satisfaction." Only satisfied workers can put forth their best in their work. Hence good management in agriculture primarily means adequate measures for economic improvement and proper motivation of the agricultural workers. Management certainly includes materials, not only men ; but it is the men who will make the best use of these materials. Unless the men in agriculture are rightly selected, trained, placed, equipped, and motivated, and assisted for improvement of their personal socioeconomic status, no satisfactory management of agricultural affairs will ever be possible. Institutions like the Managa Agricultural Management Centre, established in Swaziland by the Commonwealth Development Corporation, for training of prospective managers of agricultural development projects, as reported by British Information Services (1974), testify to the importance of management and management training in agriculture. It needs no elaboration that in order to be of any practical value the training courses offered by such institutions must emphasise on adequate treatment of the psychological characteristics and problems of the various categories of people engaged in agricultural activities in different capacities.

CHAPTER XIII

PSYCHOLOGY OF FARMERS

The farmer's mind is an interesting subject for study. He is born and brought up in an environment which is so different from that of others, particularly those who belong to towns, cities, and industrial areas. He spends most of his time, unlike others, in tending trees, growing plants, harvesting crops, rearing cattle, and so on. In a word, he is more intimate with the vegetable and animal worlds than many of his fellows in the society. Usually, he has behind him a background of similar experiences of his forefathers, spreading over hundreds and hundreds of years in the past. All this naturally contributes towards the development of a host of specific abilities, interests, sentiments, emotions, faiths, superstitions, and outlooks which together constitute his mental make-up.

In the sensory sphere of cognition, the farmers are likely to have stronger capacities than usual with many others. Gazing at the green foliage is

said to be good and soothing for the eye-sight. The farmers spend most of their time in the midst of trees, plants, bushes, and hedges. Besides, they also do a lot of exercise of their eyes in closely watching the plants they grow, looking for harmful insects and creatures that may damage their plants or crops, examining the soil, pruning the field, observing oncoming thieves and intruders—men and animals—from tree-tops or mounds, and all these exercises are intent, not casual. Thus their eyesight tends to remain unimpaired for long. This is largely borne out by the strikingly less popularity of spectacles among the farmers than in other classes of people which, though a personal observation of the present writer, is likely to be corroborated about the farmer-class, in general, everywhere. The farmers have also got to exercise and train up their ears a lot. It is, indeed, interesting to note that they can quickly and correctly catch on even very feeble sounds and accurately distinguish between the paddling of an approaching jackal and that of a passing dog, for example. They can know a large number of beasts and birds from their sounds, even when these are not in sight and keep at a considerable distance. The farmers being close to the soil, which is the bed of a large variety of smells, can also discern between scents with greater accuracy. They can often distinguish between animals, they do not see, from their peculiar scents. The farmers till the soil, handle the

clay, wade in it, bend upon the field while sowing, planting and harvesting and are thus exposed to hundreds of smells of different kinds that get released as a result of such manipulation of the soil. Besides, they are also exposed to a rich variety of odours that characterise the roots, flowers and fruits of the trees and plants they themselves grow and lovingly nurture, in addition to many others which their natural environment offers them. Regarding taste, the farmers have a scope for experiencing the tastes of their vegetable produces and animal products they derive from their own stocks to the extent to which they are in a position to use them for their own consumption. The better-off amongst them have, naturally, a wider scope for such experiences. Particularly the poor peasants of the under-developed countries having scanty clothes to wear are more exposed to the atmosphere, and thus to stimuli of various kinds that give them a lot of cutaneous sensations of touch, pain, heat and cold.

In the sphere of thinking and imagination, the farmers are mostly concerned with matters relating to their cattle and crops. Seeds, manures, bullocks, goats, sheep, fowls, ducks, ploughs, sickles, carts, and hundreds of other things like problems created by weather conditions, plant diseases, harmful creatures—things that are somehow or other vitally connected with their agricultural plans, programmes and ambitions, dominate the world of thoughts of the farmers. Like all others, the

farmers, too, have other thoughts to think. They have their near and dear ones, and friends and neighbours to think about. They may also have other pursuits and problems which demand their attention from time to time. But agriculture being the chief source of their subsistence and their major occupation will certainly take away the largest share of their thinking.

On the affective plane, the sentiments, emotions, interests, faiths, beliefs and superstitions, hopes and aspirations and all such mental states of the farmers also appear to mostly centre round the things and animals connected with agriculture. They show abundant love and care for the plants they grow and the animals they keep. Watching the saplings to grow up into plants and trees bearing flowers and fruits gives them a joy that beggars all description. They appear to have identified themselves very closely with the birds and animals they have domesticated. They give each a specific name, often indicative of their great affection for the creature. They talk to it, expressing different emotions at different times. They fondle it, caress it, feed it, bathe it, protect it from heat, cold and harmful agencies and look after it in as many ways as they can. They feel for it when it is ill and are relieved when it recovers. Strangely enough, the pets also often understand the wishes and moods of their master and respond accordingly to please and oblige him.

The farmers take a keen interest in Nature which they closely observe. They know more about wild trees and animals than perhaps any others, except the specialists. They can, with ease, correctly identify, in most cases, a patch of cloud indicative of an impending storm or one that bears rain. They can say from the direction of the blowing wind whether the rain-bearing clouds will pour or disperse. In tropical countries the farmers love to drench themselves when it rains by running out of their huts and houses into the open field. It is a grand fun and a great enjoyment for them.

The farmers seem to be a simple people, probably because they are closest to Nature and farthest from artificialities of life. They grow up and live in the lap of Nature where things are straight and direct, and hypocrisy is a far cry. Thus they are more sentimental and give direct vent to their feelings and emotions without attempting to conceal or distort them. Like the earth, which they till, they also appear to have enormous patience and capacity to bear pains. This makes them more submissive and peace-loving, and also easily contented.

The farmers are more prone to develop superstitions of various sorts. Being more intimately connected with Nature which plays a very vital role in their life, they tend to ascribe different powers and attributes, good or evil, to different objects as did their primitive ancestors. Cumulative forces of

such trends in their foregoing generations intensify this proneness. Lack of education is an additional influence in many cases.

Frazer (1971) has recorded a large number of superstitions prevalent among the peasants belonging to different parts of the world. Some of them have been mentioned earlier in this book. A few more may be cited here. For the peasants the plants and trees are not only living but each seems to many to have also a soul of its own. For example, in Malay Peninsula and Java the soul of the rice (or the rice-bride or rice-bride-groom) is represented by the first ears of the rice. In the valley of the Upper Missouri the cotton-wood, the greatest tree in the valley, is believed to possess an "intelligence" which, if pleased, will do enormous good to the local people. When the river is in spate and a tall tree falls into the current "it is said that the spirit of the tree cries, while the roots still cling to the land until the trunk falls with a splash into the stream." In Malay, Japan and also in some European countries like Bulgaria the peasants threaten, in ceremonies, barren fruit-trees so that they may soon bear fruits.

Some of the superstitions of the farmers not only reveal their anthropomorphic outlook in ascribing spirits or souls to the plants and trees but also seem to serve some useful practical purposes. In different countries, for example, the corn-spirit is conceived as different birds or animals such as wolf, dog, cock,

hare, cat, goat, bull, cow, ox, pig, fox, stag, roe, sheep, bear, ass, mouse, quail, stork, swan, and kite, and these creatures, the corn-spirits, are used as instruments in checking efforts to destroy the corn in the field. In France, Germany, and Slavonic countries, for instance, "When children wish to go into the corn-fields to pluck ears or gather the blue corn flowers, they are warned not to do so, for 'The big Dog sits in the corn' or 'The Wolf sits in the corn and will tear you to pieces'". In similar circumstances the Australian children are told that 'The Corn-cock sits there and will peck their eyes out.'

In some cases the corn-spirit is imagined as a human being called Corn-mother, Corn-queen, Corn-woman, or Old Man. In the district of Mittelmark in Prussia it is believed that the Old Man is driven out of the corn which is cut or threshed last. All the binders and threshers, therefore, work as speedily as they can and each tries to finish the work before every other, because the last person is put to ridicule and harassment by the rest. Similarly, in certain parts of Bavaria, "the man who gives the last stroke at threshing is said to have killed the Corn-man, the Oats-man, or Wheat-man, according to the crop". Thus, these superstitions not only reveal the farmers' regard for their corn but also appear to serve as a source of impetus for speed in their work. May be, the inventors of such superstitions were intelligent land owners of olden days who wanted to make the labourers, they hired

or bought, work as quickly as possible.

Subjectivity is, in fact, a natural quality of the human mind, for we all interpret our fellow-men's behaviour in the light of our own experiences. With the savages the field of such interpretation was only more comprehensive and practically covered everything they came across. Nevertheless, as the child is ever present in man, so also is the savage and this is more clearly visible among such of our contemporary people as haven't received any considerable amount of scientific education. Our belief in the existence of spirits—fairies, angels, demons, ghosts—sometimes admitted and sometimes emphatically denied though secretly cherished, testifies to the presence of the savage in the depths of the modern mind.

The farmers who have to roam about in the wilderness, and beside woodlands, cremation grounds, grave yards, and such other lonely places, sometimes solitarily and sometimes in small groups, sometimes through fog or darkness and sometimes through dim light of the twilight or the star-lit night, are thus more likely to experience illusions and hallucinations of different kinds. Distant things may take on the forms of ghosts and apparitions in the dim light or on account of peculiar light-shade combinations created on them. When trading alone in such surroundings the farmer may hear the murmur of trees or the notes of certain birds and mistake them for the whispering of in-

visible spirits. His fear, which may be very indistinct or even unconscious, may make him hear sounds not present or the utterance of his own name when there is practically none by to call him. Sometimes, deep-rooted superstitions largely contribute to the causation of such illusions and hallucinations. For example, some inhabitants of the Philippine Islands believe that the souls of their ancestors take shelter in "tall and stately trees with great spreading branches" and "When the wind rustles the leaves, the natives fancy it is the voice of the Spirit" (Frazer 1971).

In the conative sphere also, agricultural activities naturally have the greatest share of the farmer's behaviour. Besides the major activities of sowing, planting, and reaping, a lot of other activities have also got to be performed by the farmer by way of making preparations for cultivation; for taking steps for growth and protection of his plants, crops and cattle; for commercial disposal of his commodities, and the like. Most of the rites and ceremonies of the farmers, as we have seen earlier, are also likely to have an agricultural character in the main.

From the point of view of mental health, the agricultural workers seem to be more satisfied, contented, and free from tensions than the industrial workers mainly because of the fact that they get a wider scope for the satisfaction of their instinct of creativity. Whereas the industrial

workers work day in and day out for the production of a discrete part of a complex article (such as, nuts, screws, hood, engine, wheels, seats, brake, gear, etc. which put together form a motor car), i.e. whereas his work is highly specialised and sectional, the agricultural worker, on the other hand, completes the whole cycle starting from tillage of the land to reaping of the harvest. Thus there are no psychological gaps, resulting in tensions, in the case of the farmers so far as their work is concerned. But there are such gaps in the case of the industrial workers. Smith (1952) rightly remarks that "No one should be allowed to remain in ignorance of the significance of his work to the completed whole." Realising the importance of this psychological need some factories "have dealt with this problem by having on the wall a large drawing of the completed article, e.g. a tank or an aeroplane, and the part, probably quite minute, which the particular department was making, coloured in bold relief." This is, perhaps, the utmost that the factory management can do to give some mental relief to their sectional workers but undoubtedly it cannot approximate the experience the agricultural workers continuously derive from their actual participation in the entire and integrated process of agricultural operations. Again, unlike the industrial worker who deals with dead matter, the agricultural worker deals with living creatures, and also with plants that grow, mature, and bear

fruits and flowers. All this gives him a special and intensive joy of creation, a perpetual feeling of animation, and a greater identification with his herd and harvest.

Unlike the industrial workers, the workers in the agricultural sector appear to be less responsive to suggestions for change and novelty. For this their respective environments seem to be largely responsible. The industrial workers live in urban areas where bombarding of multiple stimuli in quick succession is the normal rule. Speed and variety characterise their living. Thus they are every moment responding to changing situations and have grown more responsive to changes. The farmers and agricultural workers, on the other hand, live in rural areas in the midst of solitude and tranquility of Nature, in a kingdom where "Quiet flows the Dawn". They are accustomed to a pattern of life where speed and variety have seldom any place of significance. Thus they are not so responsive to suggestions for deviations from the usual way of life they are familiar with.

The agricultural psychologist will find a wealth of materials about the workings of the farmers' mind in the novels and stories written about them by writers having intimate knowledge about this class of people. "Bengal Peasant Life" (Day 1970) is an authentic document of the simple mode of living characteristic of the peasantry of Bengal hundred years ago. The basic trends, however,

remain unchanged even today. Readers will find in this novel a lucid, vivid, and detailed description of the hopes and aspirations, feelings and emotions, faiths and superstitions, rituals and ceremonies, recreations and amusements and everyday routine of life of a young peasant and his friends and fellows of a Bengal village. "Mahesh", a short story by a great Bengalee novelist Sarat Chandra Chattopadhyay (1969), is a realistic narration of the profound love of a poor peasant for his bullock "Mahesh", of his breath-taking worries and anxieties which continuously haunted him for his inability to feed his pet, and of his heart-rending lamentation over the tragic death of his dear Mahesh at his own hands under pathetic circumstances which robbed him of his mental balance at the moment. Likewise, Bibhuti Bhusan Bandyopadhyay (1971), another notable Bengalee novelist, has very nicely depicted the nostalgic character of the Bengalee peasants in his short story "Sindurcharan". Similar works by authors of different regions of the world will surely offer a vast wealth of materials which, if carefully analysed, will tell a lot about the mental operations of the farmers.

Close association with the farmers and free and frank conversations with them will also furnish the agricultural psychologist with ample first-hand knowledge about their varied mental processes.

CHAPTER XIV

SCOPE OF RESEARCH IN AGRICULTURAL PSYCHOLOGY

Agricultural Psychology being practically a maiden subject there is naturally a vast scope of research in this area. In some of the previous chapters we have already hinted at certain topics which require careful investigation by the agricultural psychologist. Agricultural folk-tales, folk-songs, and proverbs and sayings, scattered all over the world, may be collected and analysed from the psychological view-point. Similarly, comparative studies of the totems and taboos, rites and festivities, mores and customs, and faiths and superstitions of the peasantry belonging to different regions of the world will undoubtedly reveal a great deal of facts about their minds.

The personal and occupational problems of the cultivators and agricultural labourers also need be carefully and exhaustively listed and thoroughly scanned for adoption of suitable measures for their satisfactory solution.

There seems to be ample scope of psychometric research, as has already been pointed out, in this subject. Suitable tests, inventories, questionnaires, opinionnaires, scales, methods and techniques have got to be devised and developed for measurement of intelligence, attainment, aptitude, special abilities, interests, and dispositional qualities required for excellent performance in different areas of agricultural work. Existing tests and techniques, that are being profitably used in other spheres, also need to be tried and modified, as much as necessary, for making them useful in the sphere of agriculture.

It seems much research can be done in the area of Time and Motion Study also in this field. Analysis of the actual operations of the agricultural workers, engaged in different activities, will help the psychologist to determine the best way of performing a task with the least number of movements and within the shortest possible time which will also make the worker less susceptible to fatigue and more productive at the same time.

Accidents in the field or the farm house have got to be closely studied and analysed with a view to classifying them according to their peculiarities, identifying the underlying causes, and suggesting suitable remedies.

Another area which requires intensive research relates to interpersonal relationships among the agricultural personnel, such as worker-worker relation, employer-worker relation, relation between

the old and the young workers, relation between men and women workers, relation between adult and child workers, relation among the members of the family who work together in their land, and relation between the hired labourer, on the one hand, and the head and others of the family which he serves, on the other. Discord or perversion in such relationships is likely to beget anger, fear, distrust, non-cooperation, dissatisfaction, and unrest among the agricultural workers which are sure to get reflected in their morale and output.

The training of cultivators in the use of modern manures and machineries and application of improved methods also calls for systematic research. The psychologist has to find out what methods of teaching and learning should be adopted and what aids used for training of the peasants having no, little, or only a bit of general education. The methods and aids have got to be different for different persons having wide individual differences, and they would also differ according to the nature and requirements of the task in question. Measures for removing the superstitions of the cultivators which often stand in the way of their acceptance of new ideas will also have to be decided.

As we have said earlier, there seems to be ample room for research also into the psychological conditions that govern the agricultural market and may promote the interest of both the dealers and the consumers, if properly controlled. Similarly, the

psychological problems faced with by agricultural managers and organisers will have to be ascertained through intensive interviews with them. All this will open up new domains of research. The data, thus collected, will help Agricultural Psychology grow up as a living discipline of immense practical value in the solution of the food problem that poses a grave challenge to mankind today.

As a matter of fact, the agricultural psychologist will find more and more problems, both real and interesting, for his investigation as he gets into touch with the people in this sphere and comes to know them more, and still more intimately.

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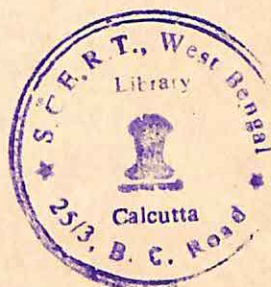
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